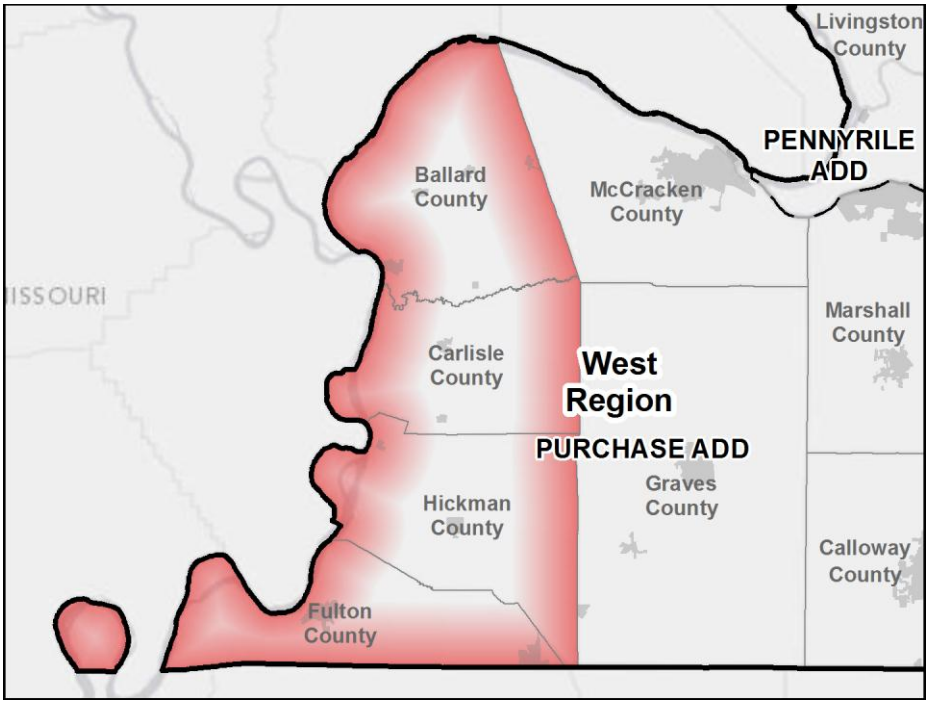
Broadband *KY*

Expanding Broadband for Education and Households in Kentucky's Mississippi River Counties

(Ballard, Carlisle, Hickman, and Fulton)



This report is based on input received from the Green River, Pennyrile and Purchase Area Development Districts and regional stakeholders, and prepared by Strategic Networks Group in partnership with Michael Baker Jr., Inc.

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Prepared for:

Commonwealth Office of Broadband Outreach and Development

&

Kentucky West Region Working Group

COMMONWEALTH OFFICE OF BROADBAND OUTREACH AND DEVELOPMENT
Promoting a 21st century economy

BROADBAND KY

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Introduction

This broadband planning document is one of five plans that have been developed as part of the Broadband KY initiative. Each of the five plans addresses a distinct set of broadband issues within a defined geographic area.

The five plans have both shared and distinct components. The shared components consist of a Kentucky-wide framework for broadband planning that establishes a common set of principles and high-level priorities across Kentucky. One of the strategic priorities shared across all regions and plans is development of the local and regional leadership needed to build sustainable momentum for improving broadband.

The distinct components of each plan are comprised of strategies and action plans specifically designed to address the priorities, circumstances and capacities of each region. All five plans have identified the lack of broadband availability as one of their local priorities. Consequently, these plans share a strategic approach to addressing this wide-spread challenge.

Creation of these plans has been through a partnership between the Commonwealth of Kentucky Office of Broadband Outreach and Development (OBOD) and Kentucky's Area Development Districts through the creation of five Project Area Working Groups. The working groups have been led by the Area Development Districts, engaging with stakeholders from the project area addressed by the plan.

Each of the five plans draw upon a body of work produced and compiled over the past several years:

- Commonwealth of Kentucky, State Broadband Initiative (SBI) maps
- Broadband KY – Central Planning Session documents and maps
- Broadband KY – Regional Provider Directories
- Broadband KY – Project Glossary
- Project Area Scope-of-Work Document
- 2012 e-Solutions Benchmarking Technical Report
- 2012 e-Strategy Report
- Regional Project Area Profile Report
- IPA Workshop – Regional Outcomes Report
- Regional Work Group Meeting Notes
- Broadband KY – Regional maps --
    - Broadband availability,
    - Household and Organization Utilization Analysis
    - KY -- Population
    - Transmission Technology
    - Upload and Download Speed

All information will become part of a Broadband planning resource document as a reference to the final regional plan, and available by qualified project participants online upon request.

The individual plans were prepared for OBOD by Strategic Networks Group, working in partnership with and under direction of Michael Baker Jr., Inc.

1. Executive Summary

With the creation of the Commonwealth Office of Broadband Outreach & Development in October 2010, the Commonwealth of Kentucky has made a commitment to pursue solutions for local broadband challenges in adoption and utilization. Key to its efforts has been a strategic approach that positions the Commonwealth as an enabler of local and regional efforts.

Kentucky's commitment to improved broadband access, adoption and utilization is based on an understanding of the impacts that broadband has on the wellbeing of Kentucky's citizens, economy and government services. Initiatives that address the digital divide at a local level are paramount.

In the West Region project area (Mississippi River counties of Ballard, Carlisle, Hickman, and Fulton), this regional planning process was initiated in May 2012 with the active involvement of the Area Development Districts as regional leaders. Since then, the planning process has been progressing through a series of conference calls and two stakeholder workshops in October 2012 and February 2013.

As a result of the planning process noted above, to address the priorities identified by the Regional Work Group and the Stakeholders, three objectives have been established and documented in this plan:

1) Development of the **leadership and institutional capacity** needed to initiate and sustain broadband efforts at the local or regional level;
2) **Enabling availability of broadband in rural residential areas;**
3) Improved public access to broadband where citizens can access broadband for free on public devices in **Internet Access Centers**[1] (IAC) or on their own device at **Hot Spot**[2] locations.

During the final development stage of this plan the KC-ADD requested the establishment of a regional broadband council under the auspices of the Area Development Districts. This issue will be considered by the Office of Broadband Outreach and Development after the Project Area plans are submitted.

To assist in developing a plan to bridge the digital divide, an assessment of the current situation was undertaken (Sections 5 and 6). One important conclusion from this assessment is that that local leadership is critical in *developing momentum in un-served and underserved communities*, especially areas with limited institutional capacity and a small population base.

Section 7 sets out recommendations to address the planning objectives and to build the momentum needed to produce meaningful broadband outcomes in the target areas. The adoption of a flexible

[1] **Internet Access Centers** (IAC): For this regional plan, **IAC** is defined as a facility, room or area within a facility that is equipped with computers, local area network and Broadband class data transmission speed, which can be used by the public for access to the Internet. An IAC may also have the potential of providing training and support in the project area.
[2] Wikipedia: "A **Hot Spot** is a site that offers Internet access over a wireless local area network through the use of a router connected to a link to an Internet service provider. Hotspots typically use Wi-Fi technology. Hotspots may be found in coffee shops and various other public establishments." *Additionally defined:* Collins English Dictionary - 10th Edition.

approach is a strategy that acknowledges the uncertainty over the level of resources available to implement the plan.

The plan provides recommendations for addressing these challenges on a local level, identifies steps for achieving goals, explores potential mechanisms for measuring outcomes through community efforts, and also provides information on how to build momentum around Broadband initiatives in the project area. Recommendations should be scalable to available funding.

The strategic direction set out in this plan is based on establishment of initial, short and medium term recommendations that can be scaled and adapted to reflect the availability of funds and commitment. Implementation times for recommendations are based on the NTIA Broadband Planning Grant received by the OBOD, from 2011 to December 2014.

By providing for varying levels of activity, regional stakeholder focus is on activities that are within the resources available, while providing for more ambitious actions and tasks as additional resources become available. Building on this approach, the detailed recommendations for this strategic planning report can be found in sections 7.1, 7.2, and 7.3.

Section 8 provides an Action Plan template for developing detailed actions and tactics to support the recommendations outlined in this document. The template will continue to be utilized after completion of the plan to identify ongoing tasks, timelines, and responsibilities associated with the project area plan.

Section 9 identifies specific metrics for measuring the progress of components within the plan (from Section 8), and the degree to which each component has produced tangible results.

2. Purpose and Focus

This document is designed to assist community efforts in achieving better access and effective use of broadband services. Through efforts to improve broadband, the people, businesses, and government bodies in Kentucky can improve opportunities, promote a dynamic economy, and develop healthy and resilient communities.

The foundation of this broadband planning document is a Kentucky-wide Strategic Framework that consists of the following elements:

- A core set of principles that reflect the Commonwealth's values and strategies regarding broadband;
- A clear understanding of why broadband matters
- Emphasis on regions and communities currently lagging behind other areas of Kentucky;
- A clear rationale for government policies and programs;
- High level goals for broadband initiatives that establish purpose and expectations for local community-based broadband initiatives;
- Development of regional broadband plans as a resource to communities in each region.

According to 2012 **Broadband KY *e*Strategy Report** and **Kentucky SBI[3] Data**, gaps currently exist in the availability and usage of Broadband services, with some sectors of the economy slow to adapt to the increasing pace of the knowledge-based economy. This planning document identifies how certain aspects of digital divide can be addressed in a defined project area within the West Region of Kentucky. While the Commonwealth of Kentucky can be an advocate and enabler (documenting best practices and developing tools and assistance programs), the most effective change agents are at the local level -- driving action and implementation on the frontline of broadband initiatives.

The strategies in this document focus on the digital divide, which can be seen in areas that are un-served and underserved[4] by broadband services, as well as in populations that are underutilizing the Internet.

[3] SBI – State Broadband Initiative: NTIA program; Investment of approximately $4 billion in the United States to support the deployment of broadband infrastructure, enhance & expand public computer centers, encourage sustainable adoption of broadband, and promote statewide broadband planning and data collection.

[4] NTIA definition - *Un-served* and *Underserved:* "***Un-served***: An area, composed of one or more contiguous census blocks where at least 90% of households in the proposed funded service area lack access to faculties-based, terrestrial broadband service, either fixed or mobile, at the minimum-broadband speed. The rules defined ***Underserved*** for Last Mile Projects: "An area composed of one or more contiguous census blocks where at least one of the following is met: 1) no more than 50% of households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband speed; 2) no fixed or mobile broadband service provider advertises broadband speeds of at least 3 Mbps downstream in the proposed funded service area; or 3) the rate of broadband subscribership for the proposed service area is 40% of households or less.

This Broadband Planning document has the following purpose:

- Defining a Strategic Framework for Planning
- Assessing the current state of broadband access, adoption and utilization in West Kentucky
- Providing Objectives and Recommendations with supporting Strategic Direction

3. Core Principles

The core principles that guide broadband planning in Kentucky:

a) The Commonwealth is an enabler of local efforts to address the digital divide.
b) Broadband initiatives should always recognize the complementary roles of markets (consumers and providers), communities, and local governments.
c) Broadband initiatives should build on benchmarks and comparative assessment of communities, regions and sectors that have been developed through the Broadband KY initiative.
d) Priority should be given to the digital divide in access, adoption and use of the Internet. More specifically, priority to "Un-served" and "Underserved" areas in terms of Internet access.
e) The Commonwealth will endeavor to provide options and resources to support local broadband initiatives addressing the digital divide.

4. Why Broadband Matters: *Benefits of Broadband Investments*

In the twenty-first century, the Internet has become an essential part of a region's infrastructure, a business's internal and external operations, and a household's participation in their community life. Availability and meaningful use of the Internet speaks directly to a community's viability, competitiveness and quality of life. The shift to the knowledge economy manifests itself at a variety of levels, from the private sector to public services to the private household. At each of these levels, Internet based activities have become integrated in the daily functioning of businesses, governments and individuals. The Internet facilitates communications, innovation, recreation, and production and Broadband access is an essential technology infrastructure to enable the knowledge economy.

In the case of government organizations, the impact of the Internet can be felt in terms of cost efficiency, accountability and the ability to deliver services to local residents. With all levels of government moving services to the Internet, those who do not use the Internet find themselves with increasingly restricted access to government information and services.

From an economic perspective, Broadband (see page 10 for description) impacts local and regional economies by facilitating internal business growth and retention, while attracting new businesses. In a similar manner, broadband facilitates development of a skilled labor force and allows a community

to compete for skilled labor that will not move to an area without broadband. The implication is that those areas that don't have broadband will lose existing skilled labor and businesses, while failing to attract new businesses and skilled residents.

Two recent reports from *Broadband KY*[5] have provided evidence of the impacts of broadband on the economy of Kentucky and its regions. The findings of the report underscore the large and critical role that the Internet plays in the shift to a knowledge economy. First and foremost, job creation is a vital aspect of the impact of broadband. The report found that that the Internet contributes significantly to job growth, with jobs facilitated by the Internet accounted for almost one third of all new jobs. The number of jobs lost (1,812) and created (3,498) over the preceding 12 months in the 720 reporting organizations in Kentucky. The seemingly high "churn" of job loss and creation is a natural part of a healthy economy. The small business sector (0 to 19 employees) was particularly effective at creating jobs through the Internet. Although this group contained less than 5 percent of all employment in the reporting group, this group produced 11.1 percent of all new jobs and Internet enabled jobs.

Evidence of the pronounced impact of broadband on the health of a local and regional economy is growing and indisputable. But for many, the mechanisms of these impacts are unclear. To better understand why broadband produces the impacts attributed to it, it helps to identify some of the specific ways in which broadband benefits the operations of businesses. Drawing on 2012 broadband utilization benchmarking data from Kentucky, the benefits most valued by businesses fell into three categories:

- **Productivity:** The Internet makes operations easier and allows organizations to more effectively use their resources.
- **Customer support and reach:** The Internet allows businesses to improve customer support, while also helping them reach new customers, often on a global scale.
- **Profitability:** Increased use of the Internet results in a growing revenues from the Internet, which is one of the fastest areas of growth. Use of the Internet also helps in reducing costs.

However, broadband availability and effective utilization is not equally present across Kentucky, as explored in the next section of this report. The relatively low level of broadband availability, adoption and use in Kentucky[1] has a negative impact on job creation and attraction of new businesses in those regions. Consequently, the lack of competitive broadband strongly impacts the ability of a region to retain its existing businesses and population.[6]

Local and regional leaders face the challenge of assessing how their community or region is performing on broadband issues. They face the challenge of finding the means to improve performance, whether it

[5] ***Broadband KY eStrategy Report:*** May 2012 and: ***Project Area Profile: West Kentucky,*** *(Appendix III).*
[6] The 2012 SNG report that benchmarked broadband utilization across Kentucky found that over 19% of households would "definitely" relocate to another community for broadband service if it was not available to them in their current location. Another 20% would consider relocation "very likely". Broadband was also considered "essential" for selecting location by 36% of businesses and other organizations, as well as "essential" for remaining in location by 59% of organizations.

is access to the Internet, adoption of the Internet or productive use of the Internet. The following sections provide information and strategies to help local and regional leaders in addressing these challenges.

5. Current Status: *How is West Kentucky Doing?*

Given the importance of broadband to the current and future health of West Kentucky, its communities, residents and businesses, it is important to assess West Kentucky's situation regarding broadband availability, adoption and utilization. The evidence drawn from national, Kentucky-wide, and regional sources shows the digital divide in West Kentucky and the Mississippi Counties in the Project Area is very real. The various broadband maps and utilization surveys undertaken by Broadband KY identify areas, households and businesses that continue to face barriers to participating fully in the digital economy. The data and perspectives presented reflect this document's focus on local broadband planning. Wherever possible, data from the project area are used. Additional data sources are used where needed.

5.1 Broadband Access

This section looks at how West Kentucky performs in terms to access to the Internet relative to both national and Kentucky targets. This assessment will need to be adjusted periodically to reflect the rapidly changing face of Internet access.

What is Broadband? The following definition of "Broadband" comes from the National Broadband Map National Telecommunication and Information Administration web site**. "**Broadband refers to a high-speed, always-on connection to the Internet. The primary factors that people consider when deciding what type of broadband Internet service to subscribe to include service availability, connection speed, technology, and price. Organizations define broadband in different ways. For information to be included on the National Broadband Map, the technology must provide a two-way data transmission (to and from the Internet) with advertised speeds of at least 768 kilobits per second (Kbps) downstream and at least 200 Kbps upstream to end users." More recently, ***the FCC has set a goal of affordable broadband with a minimum download speed of 4 megabits per second*** (http://www.broadband.gov/plan/). For the sake of consistent use of terminology, the FCC has defined the following "Internet speed tiers".

FCC Speed Tier Download Speeds Broadband		
	From	To
1st Generation	200 Kbps	768 Kbps
Tier 1 Broadband	768 Kbps	1.5 Mbps
Tier 2 Broadband	1.5 Mbps	3 Mbps
Tier 3 Broadband	3 Mbps	6 Mbps
Tier 4 Broadband	6 Mbps	10 Mbps
Tier 5 Broadband	10 Mbps	25 Mbps
Tier 6 Broadband	25 Mbps	100 Mbps
Tier 7 Broadband	Greater than 100 Mbps	

FCC Activity Minimum Recommended Download Speeds(Mbps)	
Application	Minimum Speed Recommended (megabits per second)
Email	0.5
Web browsing	0.5
Job searching, navigating government websites	0.5
Interactive pages and short educational videos	1
Streaming radio	Less than 0.5
Phone calls (VoIP)	Less than 0.5
Standard streaming videos	0.7
Streaming feature movies	1.5
Basic video conferencing	1
HD-quality streaming movie or university lecture	4
HD video conference and telelearning	4
Game console connecting to the Internet	1
Two-way online gaming in HD	4 symmetrical
Lower definition telemedicine	0.6-1 symmetrical
HD Telemedicine (diagnostic imaging)	5-10+ symmetrical

In its National Broadband Plan of 2010[7], the FCC identifies 4 MBPS as the short-term target for download speed in communities nationwide. Since current Kentucky SBI data does not breakout broadband coverage at this speed, this report uses 3 MBPS download as a benchmark for assessing current broadband coverage throughout Kentucky. The plan does not include satellite or mobile wireless Internet service in its assessment due to the challenges these technologies face with cost and reliability. This may be addressed in the future with advances in technology.

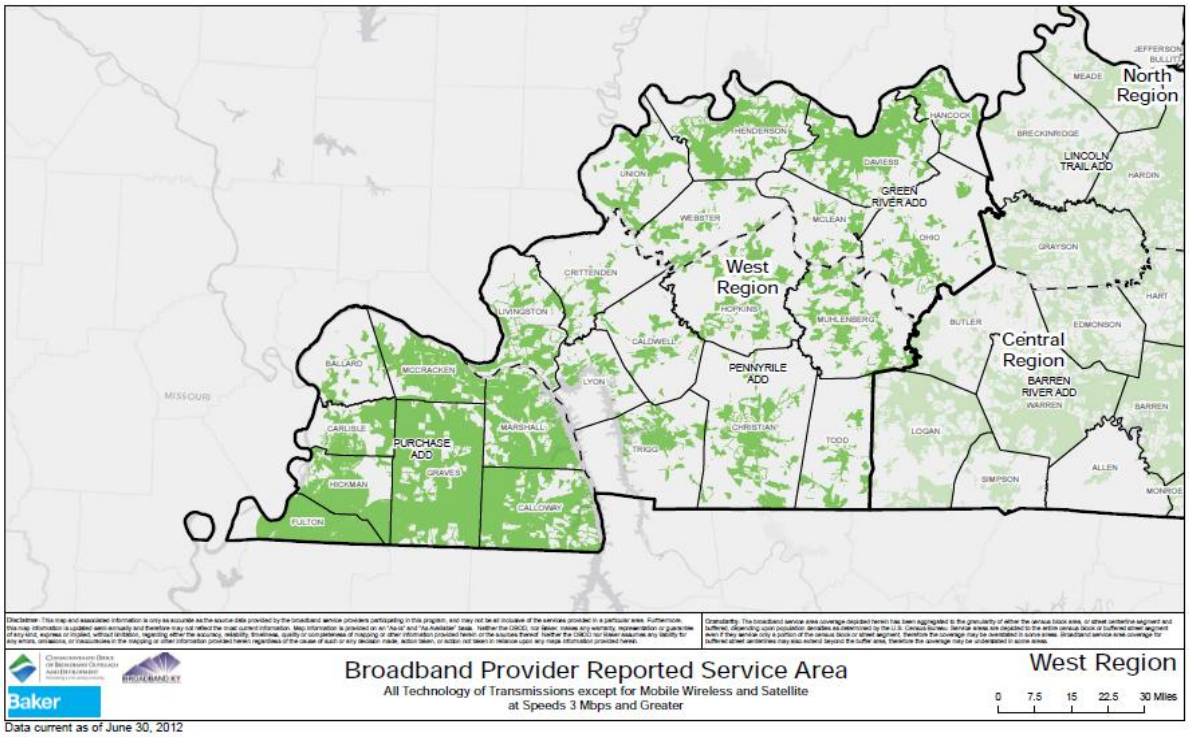
[7] http://download.broadband.gov/plan/national-broadband-plan-executive-summary.pdf *(page 3).*
"Ensure universal access to broadband network services: create the Connect America Fund (CAF) to support the provision of affordable broadband and voice with at least 4 Mbps actual download speed."

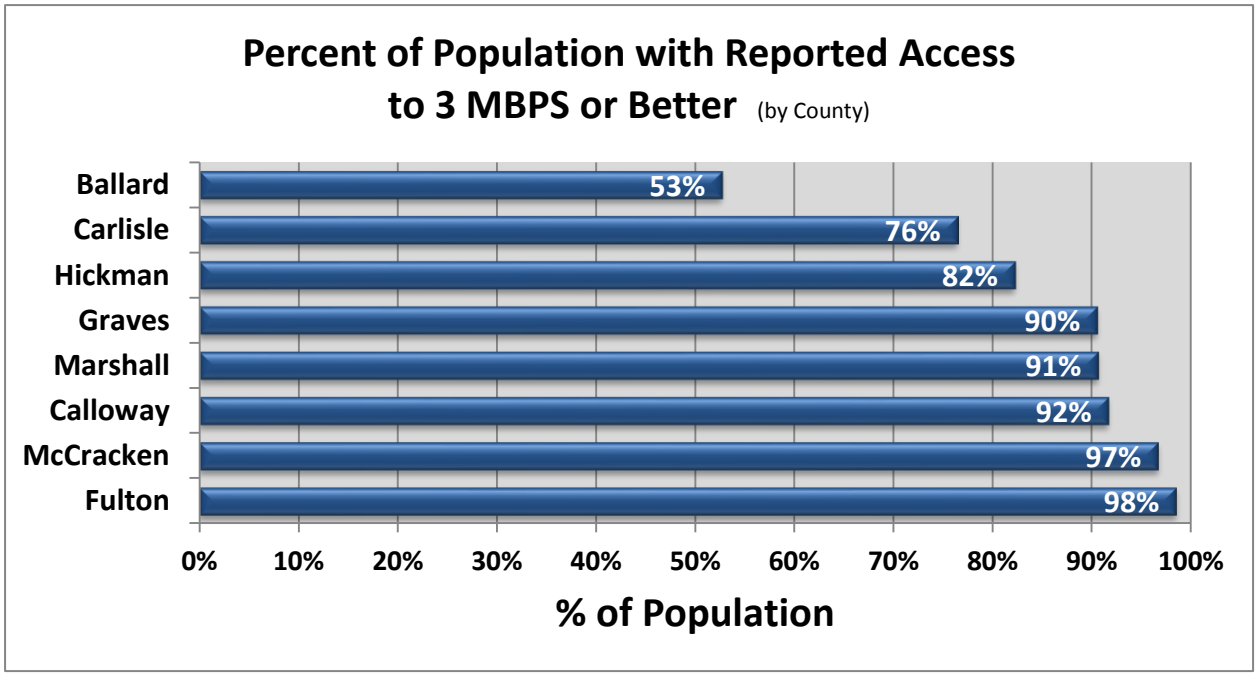
The Office of Broadband Outreach and Development collects data from Broadband Service Providers. Mapping depicting this information is available online :

http://www.bakerbb.com/kybroadbandmapping/

During the broadband planning workshops , participants (including local service providers) reported that this mapping may not show the entire details of actual local Broadband availability. Section 7 and Appendix 1 lays out a process for documenting detailed coverage at the local level.

According to Kentucky SBI provider data, most counties in the Project Area are well below the FCC target of 4 MBPS. The information provided is current as of January 1, 2013.





Broadband coverage is becoming more complex with the growth of mobile wireless coverage and the increasing use of smartphones accessing the Internet. Assessing the impact of 4G wireless networks on broadband availability, adoption, and utilization is still in its early stages. For the most part, smartphones, tablets and other mobile devices are valuable adjuncts to a business' or household's broadband access. However, mobile wireless is not presently attractive as the primary means of broadband access, especially for organizations. With lower levels of reliability, higher costs, usage caps and smaller screens, mobile broadband is usually not a good option as the primary Internet connection for businesses. For households, mobile wireless may be more attractive as a primary vehicle for accessing the Internet, though the situation depends greatly on usage patterns of each individual. For a community, having mobile broadband wireless coverage may be seen as necessary to remain a viable place for its businesses and residents. However, most will not see mobile wireless as desirable as the primary means of broadband connectivity.

There are considerations beyond simple availability of basic broadband, especially for businesses and community anchor institutions such as educational institutions, libraries and public safety agencies. As the Internet becomes a more integral part of the operations and critical systems of an organization, reliability usually becomes as or more important than speed. Moreover, for businesses with truly critical operations that are dependent on the Internet, the ability to have more than one means of access (redundancy) to the Internet becomes a major consideration in locational decisions. Lastly, there are many organizations (and households) whose demands on their Internet access require more speed than "just basic broadband".

Whether a community's motivation is acquiring basic broadband or upgrading beyond basic broadband, a similar challenge presents itself. If there is sufficient demand for broadband services as well as a competition among local Internet Service Providers (ISPs), the market will most likely address the needs of that community. Where there is limited demand or competition, communities may decide to undertake initiatives to address the lack of (adequate) broadband service. The options available to communities in this latter situation are explored in Section 7.

5.2 Internet Adoption

Providing access to Internet services is only the first step in achieving a digitally active and engaged community. National studies are consistent in their findings on which demographic groups have the lowest adoptions rates. Both the Pew and Department of Commerce studies show that approximately one in five (20 percent) Americans do not use the Internet[8]. While the non-adoption rate dropped steadily throughout the decade from 2000 to 2010, recent data suggests that the rate has not changed over the last two years. Looking at availability of broadband in the home in 2010, 58 percent of Kentucky households had adopted broadband, which is significantly lower than the national average of 68 percent. Sixty-five percent of Kentucky households in urban areas had broadband compared to only 49 percent of households in rural areas.[9] Whether by choice or economic circumstance, these residents do not access services that provide a broad range of benefits to most residents of Kentucky.

Looking at businesses, the issue of adoption is less clear. A FCC study in 2010 found that 95 percent of businesses with five or more employees had a *broadband connection* and consequently can be considered adopters of the Internet. For businesses with four or less employees, the situation is less clear, with mixed estimates from different studies. To the extent that low adoption is an issue among micro businesses, adoption efforts targeted at individuals and households will have a secondary benefit as these people will also be the owners of many of West Kentucky's micro businesses.

Recognizing the benefits of increasing levels of Internet adoption is a first step on the road to developing a Broadband adoption strategy. A key consideration in designing a strategy is understanding who the "non-adopters" are and what are the barriers or motivations that keep them from using the Internet. Results across different national and state studies are very consistent in their findings. Non-adopting individuals have disproportionately one or more of the following characteristics: lower income, over 65 years old, residents of non-metropolitan areas, physical or mental disability and less than a college education. Race and ethnicity have a noticeable correlation to adoption levels, with African Americans

[8] See: *Digital Differences,* Pew Internet & American Life Project*,* April 2012; and*: Exploring the Digital Nation - Computer and Internet Use at Home*, US Department of Commerce (Economics and Statistics Administration and National Telecommunications and Information Administration), November 2011. Based on Current Population Survey of the Census Bureau.

[9] ***Digital Nation: Expanding Internet Usage***: **U.S. Department of Commerce:** National Telecommunications and Information Administration; 2011; http://www.ntia.doc.gov/report/2011/exploring-digital-nation-computer-and-internet-use-home.

and Hispanics having significantly lower adoption levels. However, most of the variance in adoption levels between whites and African Americans or Hispanics is explained by differences in incomes and education. Rural residents also have noticeably lower levels of adoption, compared to residents of metropolitan areas.[10]

Numerous research efforts have been carried out to determine the main barriers to Internet adoption. The results have shown that non-adoption is usually a result of a combination of factors, rather than any one factor. The three most critical factors include: costs of broadband service and owning a computer; digital literacy; and, lack of interest or perceived relevance of the Internet to the non-adopting individual or household. Other relevant but less frequently cited factors include concern over privacy and security and lack of broadband availability.

Additional characteristics of non-adoption include the following:

- In a survey of non-adopters in Kentucky in 2012[11], seniors were far more likely to cite lack of interest (46%) and non-use of computers (26%) as their primary barriers (with cost cited by 21%). In contrast, 59 percent of low income households with children cited cost as the primary barrier, with lack of interest cite by only 11 percent and non-use of computers cited by 13 percent.
- According to a 2012 Illinois study[12], "Some one-quarter (24%) of non-broadband users in Illinois say they would be interested in getting broadband service at home. Three-quarters (76%) of non-adopters exhibit little interest in home **broadband** service and they typically cite a range of reasons for not having high-speed Internet at home – such as not seeing the relevance of broadband, digital literacy, and cost barriers."

In recent years, the popularity and power of smartphones has added a dimension to Internet adoption. With people increasingly using smartphones to access the Internet[13], it is important to understand the implications of smartphones and mobile wireless connectivity. In the previously cited Illinois study, 46 percent of Illinois residents were found to have a smartphone that provided wireless online access (similar to the national smartphone adoption rate). This study had found that "for the most part, those with smartphones also have broadband at home – 85% of smartphone users have home high-speed service. This translates into just 7% of those surveyed having "smartphones only" as their sole means of online access." These findings reflect the situation in Mississippi Counties, as Pew Research Center surveys show smartphone trends to be consistent nation-wide, with some regional variation.

[10] ***Broadband KY* e-Strategy Report 2012**.

[11] ***Broadband KY* e-Strategy Report 2012** Page 42;

[12] ***Broadband Adoption in Illinois***, 2012; http://www.broadbandillinois.org/news/203. Additional findings on smartphone use from this report include: Smartphone adoption is particularly strong for African Americans (52%) and Hispanics (60%). Some 15% of African Americans and 18% of Hispanics are "Smartphone only" users (i.e., they have a Smartphone but no home broadband). ***However, those with Smartphone-only access do substantially fewer online activities than those with both broadband and Smartphones, or broadband-at home alone.***

[13] **Pew Research Center - Internet & American Life Project:** "Among cell phone users, smartphone ownership has increased from 33% in May of 2011 to 46% in April 2012." Survey of 3,014 adults between August 7 and September 6, 2012. http://pewinternet.org/Reports/2012/Smartphone-Update-Sept-2012.aspx

An important conclusion in the Pew report was that "smartphones have made significant inroads into addressing access inequities across racial and ethnic categories. However, while smartphones open the door to online engagement, they do not open the door as widely as home broadband access."

Based on the above evidence, the following conclusions can be made:

a. Based on Broadband adoption rates in Kentucky, which are consistently below national averages, it can be reasonably extrapolated that this condition is the same for West Kentucky and the Mississippi River Counties, given their low population density and demographics;
b. Based on coverage data from the West Kentucky and Mississippi Counties, as well as national adoption trends, between a third and a quarter of households do not have broadband access in their homes;
c. Based on both national trends and Kentucky data on non-adoption from the Broadband KY *e*-Strategy Report in 2012, it is evident that non-adopters come disproportionately from the following groups: lower income, elderly, rural, African American, and Hispanic.
d. Both Broadband KY data and national surveys show that the major barriers to Internet adoption consist of a combination of cost, interest, relevance, and digital literacy. The type of household has a major impact on the relative importance of the main barriers to Internet adoption, with cost being the greatest barrier for younger households and interest and relevance being most important for older households.

5.3 Internet Utilization

Organizations differ in their utilization of broadband and Internet infrastructure. Turning potential into reality requires skills, training, and both formal and informal support, in addition to access to broadband connectivity. The data and analysis contained in the Broadband KY e-Strategy Report show that productive use of the Internet is related to the size and density of a community or region, the types of industry sectors that make up its economy, the level of diversification of its economy, and the income, age and education of its citizens.

While there are no national data sets that allow for regional comparisons of Internet utilization, several in-state research efforts have been carried out, including one in 2012 in Kentucky. Results from these various states show a relatively consistent picture of how the digital divide continues to manifest itself once adoption has happened. The benchmarking of Internet utilization in 2012 identified where the digital divide manifested itself in Kentucky.

The key findings were:

- **Internet utilization by organizations** in West Kentucky overall is moderately lower than the state average (see Figure 1, next page),
- There are significant differences in how various industries utilize the Internet. One of the most important of these is the size of an organization, which impacts an organization's ability to adopt

and benefit from more difficult e-solutions. Smaller organizations have lower levels of Internet utilization as can be seen in the following Figure 1 below.

- Smaller organizations represent a key opportunity to increase utilization levels. This is particularly relevant since organizations with 1 to 49 employees represent 95 percent of organizations in West Kentucky.
- Organizations outside of metropolitan areas[14] have, on average, significantly lower utilization levels than those in a metro region. Organizations outside of a metropolitan area usually do not benefit from the dense network of supports and a large skilled labor pool.
- **Utilization of the Internet by households** in West Kentucky is slightly lower than the state average, while the Purchase ADD has higher median utilization than both the West Region and Kentucky as a whole.
- For households, the dynamics of the digital divide in Internet utilization are very similar to those with Internet adoption. Lower Internet utilization is typically associated with households that are lower income, older, less well educated and non-metropolitan. While there is a consistent increase in utilization that tracks increased income, the most dramatic drop in utilization occurs among the oldest age group (those over 65), especially seniors with incomes under $30,000.
- The 2012 benchmarking survey in Kentucky indicated that public access facilities in the Purchase ADD have more restricted hours than most facilities across the West region and across Kentucky. While this conclusion is based on a relatively small sample, if the data is representative of the situation in the Purchase ADD, consideration should be given to extending hours of public access to evenings and weekends.

Figure 1: Internet Utilization (DEi[15]) by Employment Size: *West Kentucky*

Organizations: Employment Range	Kentucky	West Kentucky	Sample Size West Kentucky
1 to 4	5.83	5.92	121
5 to 49	6.41	6.21	195
50 to 99	6.80	6.94	36
100 or more	7.38	7.57	32
All Size Ranges	6.41	6.31	394

[14] A metropolitan area is defined by the Census Bureau as having a core urban area of over 50,000 with a population density greater than 1,000 people per square mile. A Micropolitan area has a population of 10,000 to 49,999. A small town has a population of 2,500 to 9,999. The category of "isolated small town" includes the remainder.

[15] The Digital Economy index (DEi) reflects an organization's utilization of 17 Internet applications and process. Based on the number of applications currently being used by an organization or household, a composite score is calculated. An organization's score (from 0 to 10) captures their Internet utilization, with 10 being the highest possible use. **The Color Coding for DEi Scores:** To better show how sectors perform, the DEi tables in this report are color coded from the highest (**green**) to lowest (**red**) to highlight how DEi scores compare. **The color coding** (**green to red**) allows one to quickly compare groups based on how utilization varies.

Figure 2: Share of Labor Force by Size of Organizations

Number of Employees	West Kentucky
1 to 19	85.9%
20 to 49	9.1%
50 to 99	2.7%
100 to 499	2.1%
500 or more	0.2%

Lower utilization levels have been shown to have important impacts on the benefits from Internet access received by the users (household or business) and their communities. Households with higher utilization levels demonstrate the higher use of activities that produce household income through both teleworking and home-based businesses. Businesses with high levels of utilization report noticeably higher levels of revenue generation from the Internet.

6. Strengths, Weaknesses, Opportunities and Threats

The document sets forward the following as goals for the Commonwealth of Kentucky:

a) Communicating the value of internet access to improve the lives of all citizens;
b) Accelerating the expansion of sustainable Broadband access, participation, and adoption by citizens and businesses in the digital economy and society;
c) Promoting Broadband use to be globally competitive and to enable a better economy;

The preceding section shows that the current situation in the West Kentucky region falls short of meeting these goals. If West Kentucky is to make meaningful progress towards these goals, it is important to assess the current situation. This planning document uses the SWOT process that identifies current **S**trengths and **W**eaknesses, as well as future **O**pportunities and **T**hreats. The table below provides a snapshot assessment using SWOT. Section 7 will draw on this SWOT assessment to develop strategies that address the weaknesses and threats, while building on current strengths and future opportunities.

Strengths	Weaknesses
Interest from many local stakeholders Role of the OBOD as a Broadband advocate and enabler Improved potential for wireless services (fixed and mobile)	Low density population in un-served rural areas Poor business case for conventional solutions Lower interest among some incumbent ISPs Limited financial capacity at all government levels Many competing high-priority projects in rural communities
Opportunities	**Threats**
Fixed and mobile wireless technology Greater provider collaboration Public-private partnerships Renewed interest from incumbent Providers	Economic uncertainty Global competition eroding local economic base Fiscal constraints on all levels of government Current Provider economics make it less attractive for last mile investments

Strengths

- There is a broad appreciation among non-metro communities of the importance of broadband. Understanding of the benefits of broadband is significantly greater than three or four years ago.
- The Commonwealth has been very supportive of local and regional efforts to expand last mile broadband infrastructure.
- The increased technical capacity of both fixed and mobile wireless have provided some previously un-served or underserved areas with cost effective Internet access.

Weaknesses

- Many un-served rural areas in the West Region project area have low population densities and challenging topography.
- Un-served or underserved areas with low populations and challenging topography make a poor business case, especially for conventional landline based Internet services. These areas may be difficult to serve without public financial support and are also less likely to have the institutional capacity and leadership needed to take advantage of the resources and opportunities available.
- In some non-metro areas that have developed broadband infrastructure, there has been low adoption of broadband services or primarily adoption of lower end and lower cost services. This

has resulted in lower than anticipated revenues for providers, while also indicating that local businesses and households are not realizing the potential benefits of many broadband services.
- The dynamics described in preceding points may mean incumbent ISPs are less motivated to expand landline services in un-served and underserved areas.
- Due to their small size and limited staffing, most non-metro communities have limited capacity and face challenging fiscal circumstances that constraint their ability to respond to low levels of broadband availability, adoption and utilization.
- There is presently little interest or energy given to broadband issues in rural and non-metropolitan communities due to many competing high-priority projects in rural communities.

Opportunities

- Across the US, fixed wireless is increasingly seen as an attractive and viable infrastructure technology for last mile (and occasionally middle mile) Internet access in non-metro areas. With low capital costs, relatively short installation schedules, and an ability to use existing "vertical assets", fixed wireless offers an opportunity to extend Internet access to many rural residential areas currently un-served or underserved. Fixed wireless has demonstrated the ability to increase both its quality of service (which has been weak in some areas) and connection speeds.
- Mobile wireless is beginning to offer a broader range of Internet services over 4G networks, which may meet the needs of some households that are currently un-served or underserved.
- As seen in the GRADD public-private partnership (as well as many other communities across the US), there is both potential and interest in collaboration between communities and services providers. In some cases this can extend to collaboration between service providers.
- Provider interest and participation during the West Region IPA and FPA workshops, and successful community and regional Provider engagement strategies regionally and nationally show the potential for greater provider involvement utilizing different technologies.

Threats

- Residents in un-served communities may lose access to public and private services that increasingly are available only online.
- Ongoing regional, national and global competition will erode the economic base of those communities without competitive broadband.
- The weak and uncertain national and global economies make investment decisions more difficult, as future revenue streams become more uncertain.
- Fiscal constraints on local government are anticipated to last for an extended period, limiting their capacity to initiate and support broadband initiatives.
- Providing Internet infrastructure to those areas with the best business case will make the remaining areas increasingly less economically attractive for last mile investments.

7. Objectives and Recommendations

Building on the core principles outlined in Section 3, the Commonwealth of Kentucky has the following high level goals in relation to broadband:

a) Broadband Internet will enhance the productivity, skills, mobility, and employment opportunities for residents of Kentucky;
b) Access and digital inclusion will be achieved for all citizens and businesses.

This planning document is designed to assist the Commonwealth with the implementation of these goals for the Mississippi River Counties in the West Region.

To bring about deliberate and planned change by government or a group of citizens, it is important to base their efforts on a sound understanding of their objectives and how they can best bring about the desired changes. This document sets out a process to inform communities and regions of initiatives on broadband access, adoption and improved utilization.

In pursuing change, this Broadband plan sets out recommendations with strategies that build on the principles set out in Section 3. Two important elements that emerge from these principles are:

- Broadband initiatives should recognize the complementary roles of the market (consumers and providers), communities, and local governments; and,
- Priority should be given to areas where the digital divide is evident in access, adoption and use of the Internet. Specifically, priority should be given to "Un-served" and "Underserved" areas.

The principals, elements and supporting information described in this document serve as the fundamental rationale for the broadband plan. The three objectives addressed include:

1. Development of the **leadership and institutional capacity** needed to initiate and sustain broadband efforts at the local or regional level;
2. Enabling availability of broadband in rural residential areas;
3. Improved public access to broadband where citizens can access broadband for free on public devices in **Internet Access Centers** (IAC) or on their own device at **hot spot**[16] locations.

The first issue that needs to be addressed in terms of achieving these goals is the uncertainty over the level of financial and non-financial resources available to implement this plan and its recommendations. With a tight fiscal situation and declining broadband stimulus funding, ***the first strategic direction set***

[16] Wikipedia: "A **hotspot** is a site that offers Internet access over a wireless local area network through the use of a router connected to a link to an Internet service provider. Hotspots typically use Wi-Fi technology. Hotspots may be found in coffee shops and various other public establishments." *Additionally defined:* Collins English Dictionary - 10th Edition.

out in this plan is the setting of objectives and recommendations that can be scaled to reflect the availability of funds, energy, and commitment. For each of the strategic objectives, this plan sets out recommendations that allow regional stakeholders to adapt the plan to the resources available.

Addressing the issue of resource availability reduces a significant risk that the objectives, recommendations and supporting strategies outlined in this plan will not be implemented. By adopting a strategy that allows for varying levels of activity, there is a greater likelihood that the recommendations in this plan will be implemented. Additionally, achieving an initial level of success can help to build momentum for the long term achievement of the objectives set out in this plan.

The ***Recommendations*** in Section 7 have been organized into three categories:

- **Initial:** Related to project initiation and intended to be completed over the first 1 to 2 months.
- **Short-term:** Mobilize resources for implementing the project, including: financial, leadership, and partnerships. These recommendations often include ongoing actions, though their initial phase should be completed in the first four months of the project.
- **Medium-Term:** These involve "on-the-ground" implementation of the plan's strategies and would typically occur after the 4th month of project initiation, some may be subject to obtaining the required resources, which may need additional time. The activities covered by these recommendations do not have a completion date, since many of the activities are expected to be ongoing.

Figure 3: Example of Implementation Timeline for Recommendations in Section 7

Approximate Recommendations Timeline						
Recommendations	Month 1	Month 2	Month 3	Month 4	Month 5	Project Duration
Objective 1:						
Initial	Commence at 45-60 Days or Less		Some Require Ongoing Effort			
Short Term			Commence at 2-4 Months or Less		Some Require Ongoing Effort	
Medium Term					Commence at 4 Months or Less	
Objective 2:						
Initial		Commence at 1-3 Months or Less		Some Require Ongoing Effort		
Short Term				Commence at 3-5 Months or Less		Some Require Ongoing Effort
Medium Term						Commence at 4 Months or Less
Objective 3:						
Initial		Commence at 1-3 Months or Less		Some Require Ongoing Effort		
Short Term				Commence at 3-5 Months or Less		Some Require Ongoing Effort
Medium Term						Commence at 4 Months or Less

The detailed recommendations are found below in sub-sections: 7.1, 7.2, and 7.3

7.1 Recommendations for Building Local and Regional Leadership and Capacity

The strategic framework presented in the document relies on communities and regional entities to provide initiative in addressing the digital divide in their area. In rural areas, lack of capacity and leadership has the potential to limit the effectiveness of a community-based approach. Consequently, ***a strategic objective for adequate rural broadband service is the development of motivated leadership and institutional capacity for broadband initiatives.***

In the West Region project area, the Area Development Districts have identified themselves as leaders with organizational capacity to manage the broadband initiative in their project area. The ADDs bring the following abilities to the broadband initiative:

- An organizational structure and network of elected officials and stakeholders
- Local knowledge of the area and its priorities
- Ability to work with communities to identify un-served and underserved households at the street level

During the final development stage of this plan the KC-ADD requested the establishment of a regional broadband council under the auspices of the Area Development Districts. This issue will be considered by the Office of Broadband Outreach and Development after the Project Area plans are submitted.

In addition to establishing leadership, there is broad agreement that "local champions" are a critical component for the success of broadband initiatives. This plan recommends ***establishment of a broadband leadership and support program for local communities within the project area.*** It is increasingly rare for local government leaders to be unaware or uninterested in the desirability of having good Internet access throughout their jurisdiction. However, interest and awareness has frequently not translated into action in communities where financial resources are constrained, technical knowledge is missing, and leadership is in short supply.

Important elements of leadership and capacity development at the community level include:

- **Recruitment of individuals** with the interest, energy, and time needed to provide leadership. Leaders do not need to be people with technical skills, but should be individuals with the motivation and skills to take initiative and engage their community.
- **Empowerment of leaders** by providing official sanction and support from elected officials and key community organizations.
- **A mechanism for accountability** for leaders back to organizations providing support and sanction.
- **Educational and learning opportunities** for leadership so they can acquire the knowledge and skills for developing goals, actions and tasks related to the digital divide in their area.

- **Institutional support** from organizations with the capacity for organizing meetings, ensuring effective communications, and providing logistical support.

Finding and developing leadership at the local level can include key individuals, local stakeholders or stakeholder organizations willing to take on initiating and maintaining local broadband efforts. *In practice, a mix of key individuals and local institutions is often the most effective form of leadership.*

Recommendations for Leadership Development

Initial Recommendations:

a) Establish a regional body to promote and recruit community leadership for broadband availability or public Internet site initiatives.
b) Actively research and access viable funding sources for the project and sustainable broadband planning and leadership.
c) Commence regional efforts to identify and recruit individuals and organizations at the community level willing to take on leadership roles for broadband availability in the project area. This effort can be carried out through proactive telephone and email survey at the local government level, and with major stakeholders in the project area or greater region.
d) Provide orientation sessions to individual and organization leadership to orient them about Broadband, the available resources and how they can improve broadband availability and/or enhance Broadband opportunities in their community.
e) Develop tactics that fully leverage State Broadband initiatives.
f) Establish a sub-committee of Broadband Providers

Medium Term Recommendations:

<u>In addition to the above:</u>

g) Organize a series of webinars or face-to-face workshops to assist local community leaders in the project area in developing local broadband planning and outreach priorities on broadband for education or through expanded public access.
h) Facilitate a peer-to-peer support group among community leadership;
i) Provide technical assistance on issues related to improving rural residential broadband availability. This component is critical to empowering local communities and their leaders and provides community leaders engaged in broadband with a mechanism for accessing local and regional individuals with technical skills and experience in facilitating broadband availability. As communities engage in broadband initiatives, they will encounter issues requiring expertise. Access to knowledgeable individuals, as mentors or paid consultants and a mechanism that facilitates this process will be an important strategy to meeting this need.

Given that many rural communities face the shared challenge of developing and supporting local leadership, it is also ***recommended that active and ongoing outreach to state-wide and regional organizations with complementing objectives be undertaken to explore collaborative opportunities through funding or in-kind contribution. Several agencies of Commonwealth government, industry groups and service organizations are potential groups to be targeted.***

Checklist for Developing Community Leadership

Individual leadership

- Community leaders and elected officials understanding benefits and impacts of broadband
- At least three committed leaders
- Leaders that have the influence to enlist community support
- Leaders committed to obtaining the resources for implementation.

Organizational leadership and capacity

- One or more lead organizations have been identified
- The lead organization(s) are willing to develop partnerships for implementation and operation
- Personnel within lead organization are identified and available to provide leadership and support.

Shared Vision: Leadership (individual and organizational) has a shared vision of the broadband initiative;

Community support:

- Benefits of broadband are understood and supported by local businesses and key organizations
- There has been community engagement on the benefits of broadband and in the level of support for a broadband initiative.

7.2 Recommendations for Enabling Broadband Availability

Communities in the Mississippi River project area that have less than adequate Internet services face significant barriers in overcoming this digital divide. Nonetheless, communities in the project area have the potential to develop the leadership and commitment necessary to achieve the broadband they need for their residents, businesses, and community anchor institutions.

In the West Kentucky project area, the priority is on enabling broadband availability to rural residential areas without high-speed Internet service and improving public access.

The issue of poor or no Internet services in schools and rural residential areas can be highly fragmented in the Mississippi River Counties. A regional approach to this issue in the project area will enable local leaders to directly address the need. ***This plan recommends a process whereby communities in the project area take responsibility for proactively identifying, finding, and compiling detailed information about un-served and underserved areas at the street level that addresses their community's needs. These local efforts should be supported by the regional body with outreach, education and support.***

Appendix I includes a detailed outline of the key opportunities and requirements facing local communities. It is recommended that communities adapt this process to fit their own circumstances and culture. The result should be process where the values and priorities of a community determine subsequent tasks and choices. As communities move down the road to implementing specific strategies, they may find that initial choices need to be re-assessed. Improving broadband availability requires persistence and the ability to work over an extended period.

If the overall strategy is based on local responsibility and leadership, there still remains significant scope for regional Work Group and stakeholder efforts to support these local initiatives to expand broadband availability. ***The recommendations below can be combined with or in addition to the steps outlined in the section on leadership.***

Initial Recommendations:

a) Develop and circulate an information package among local communities that identifies the resources and opportunities available for improving broadband availability at the local level;
b) Circulate, promote and leverage the "eLearning Module" on community approaches to improving broadband developed by the Office of Broadband Outreach and Development.
c) Use regularly planned events for local governments to promote the ideas and materials available in this plan and on the eLearning website.
d) Leverage the Broadband Provider sub-committee and regularly meet and discuss availability issues in the project area, to solicit on-going input from the group on their information package (Recommendation **a**), and to begin broadband-specific collaboration among project leadership and Providers to improve communication and find ways to collectively improve availability.

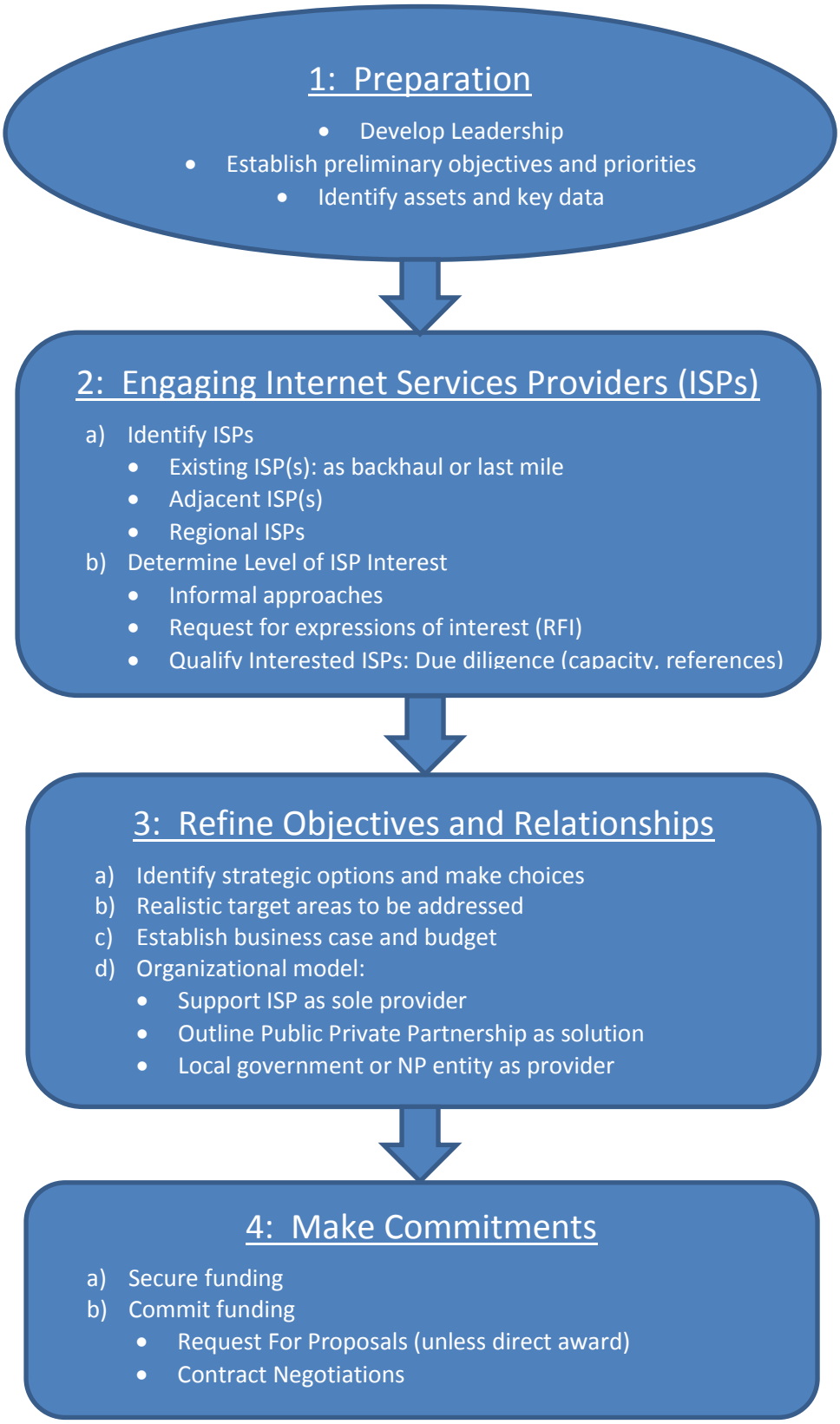
Medium Term Recommendations:

e) Building on the efforts identified above, develop and expand regional approaches to Local Internet Expansion, bringing together communities that undertake local broadband availability initiatives. This would be a collaborative effort based on a shared process, in tandem with community work on local project initiatives and would include additional regional or Statewide Providers. Include a process for communities to share information and resources, active mutual aid or peer support, and technical assistance as noted in the section on leadership.

Appendix 1 includes detailed information about the process and tasks for local communities to use for expanding broadband services in rural residential areas. It also includes basic starting points for consideration prior to commencing a community effort.

7.2.1 Stages and Tasks for Internet Access Initiative

The diagram on the following page is a visual representation of the stages and tasks that communities should typically follow during an Internet access initiative. The steps and tasks identified are explored in greater detail in Appendix I. The Office of Broadband Outreach and Development (OBOD) has also created an online "eLearning" module that addresses local broadband availability. The module is available on the website noted below and includes a case study of the GRADD project: http://finance.ky.gov/initiatives/broadband/pages/default.aspx .


1: Preparation
• Develop Leadership
• Establish preliminary objectives and priorities
• Identify assets and key data
2: Engaging Internet Services Providers (ISPs)
a) Identify ISPs
• Existing ISP(s): as backhaul or last mile
• Adjacent ISP(s)
• Regional ISPs
b) Determine Level of ISP Interest
• Informal approaches
• Request for expressions of interest (RFI)
• Qualify Interested ISPs: Due diligence (capacity, references)
3: Refine Objectives and Relationships
a) Identify strategic options and make choices
b) Realistic target areas to be addressed
c) Establish business case and budget
d) Organizational model:
• Support ISP as sole provider
• Outline Public Private Partnership as solution
• Local government or NP entity as provider
4: Make Commitments
a) Secure funding
b) Commit funding
• Request For Proposals (unless direct award)
• Contract Negotiations

7.3 Recommendations to Improve Internet Access

With limited public access to the Internet in many parts of the project area, a broadband planning priority for the Mississippi River Counties is expansion of Internet Access Center (IAC) services for targeted groups with the greatest need. Internet access centers are seen as a critical element in driving Internet adoption and skills among groups that are either non-adopters or have low levels of Internet use. Based on the assessment highlighted in Sections 5 and 6 and input received from the IPA and FPA Workshops, the following are recommended as specific target groups for IAC services:

- K- 12 students who need broadband access after school hours;
- Seniors, especially those with lower incomes;
- Unemployed members of the labor force, especially those with lower computer skills;
- Small business entrepreneurs / self-employed / home based businesses.

Each of the above groups has sub-optimal Internet use and the potential to improve. The value of Internet Access Centers in addressing the needs of these target groups has a number of components: free Internet access at decent speeds; a safe and quiet environment; support from knowledgeable staff or volunteers; and, specific training on use of the Internet. To develop IAC's during fiscally challenging times, creative strategies are necessary. The strategies recommended are the following:

Initial Recommendations:

a) Expand the Regional Body to include stakeholders interested in supporting the Internet Access Center approach;
b) Develop an Action Plan for both low and high levels of efforts, with the latter being contingent on additional resources.

Short-term Recommendations (to maximize existing resources):

c) Survey existing public access sites to determine interest in the project and the characteristics of current facilities and their programming support.
d) Organize workshops in the project area at existing public access locations to actively explore and promote opportunities for:
    - Integrating public Internet access sites within facilities that have their own resources (examples would include seniors centers, health clinics, recreation centers, employment training centers, and small business support centers. Public Internet access centers need not be stand-alone independent entities).
    - Organizing collaborative initiatives combining different organizations and sectors to improve the services of IAC's. This could include having one organization provide training to their target population out of another organization's facility.
e) Identify potential Wi-Fi hot spots where access centers are not a viable option. While this is not an optimal option, in some communities this may be the best solution.

f) Seek out locally based organizations and facilities that may provide support to targeted groups, such as service clubs, churches, veterans groups, and libraries. This may include recruiting and cultivating project leadership from these groups.

Medium Recommendations:

g) Develop new programming and/or expanded hours to meet the needs of the following groups --
- **Low income households with children**: Make sure public Internet access sites are open for after-school hours, including evenings.
- **Unemployed Individuals:** For unemployed individuals, the primary vehicle for digital literacy would be through employment training centers and libraries.
- **Elderly Individuals and Households:** The most frequently cited barriers for seniors are lack of relevance and lack of digital literacy. Providing inviting and informal settings seems to put many seniors at ease and minimize their anxieties about technology.

h) Examine options beyond Public Internet Access sites that achieve similar objectives.
- Literacy training is most effective when embedded in activity that the adult already values or is comfortable with. Creative Internet programming for seniors can build on their interest in grandchildren, health, and cooking classes. Training sessions can be delivered in informal settings or seamlessly integrated into existing programs and services. Tablets and set-top television boxes are also non-traditional vehicles for accessing the Internet that provide an alternative to the often intimidating desktop computer with its complex operating programs.
- The primary barrier to adopting broadband within low income households with children is cost. A number of distinct strategies can help non-adopters who cannot afford (or don't believe they can afford) a broadband connection and computer in their own house: free or low cost computers and broadband services; a Life-Line pilot project.

8. Action Plan for Broadband in West Kentucky Project Area

The action plan components included in this section are preliminary. They begin to outline the tasks, timelines, and responsibilities reflected in the recommendations in Section 7. It is expected that this outline will be adjusted with more additional detail as the plan is implemented, to reflect the availability of resources and with more information being developed for the work required for implementation.

Objective 1: Build Local and Regional Leadership and Capacity

Component (with Section 7 Reference Number)		What	Initial Leadership	Other Stakeholders and Local Leadership	Begin Month	Outcome
1a	Establish Regional Lead Body	Recruit & confirm involvement and level of commitment	PuADD & Work Group		1	Establish committees and subcommittees
1b	Secure Funding Sources	Approach potential funders	PuADD & Work Group	Delta River Authority & others	2 (ongoing)	Submit funding applications, research others
1c	Expand leadership (Community Level)	Recruit new community leaders & stakeholders	PuADD & Work Group	K – 12 Superintendents & principals; IAC Sponsors; Members outside of gov.	1,2	Leaders with focus on public Internet access.
1d	Orientation Sessions	Provide orientation sessions – for individual & organization leadership	PuADD & Work Group	K–12 Superintendents & principals; Murray State; IAC Sponsors; Members out of gov.	2	At least two webinar or face-to-face orientation session.
1e	Tactical develop. to leverage State initiatives	Develop tactics that fully leverage State Broadband initiatives.	PuADD & Work Group	Local gov. or business contact w/PR skills and project interest	2	*e-Link to appropriate state web sites *Connect/coordinate with state on PR progress reporting
1f	Establish Provider sub-Committee	Build partner relationships and problem solving approach	PuADD & Work Group	Project area providers, utilities, GRADD, QWireless, Fastnet, others	1,2	Group becomes an input source on availability gaps in the project area.

1g	Organize a series of webinars or face-to-face workshops	Raise awareness and support local community leaders in developing local broadband planning and outreach.	PuADD, Community Leaders		Subject to resources	Community oriented workshops and webinars.
1h	Establish peer support and	Facilitate peer support for community leadership	PuADD, Community Leaders	Murray State University, Commercial Business, Local Gov., tech service providers , BB Providers,	Subject to resources	Functioning community leadership peer group.
1i	Provide technical assistance program	Provide community leaders with access to resources, technical skills and experience	PuADD, Community Leaders	Murray State University, Commercial Business, Local Gov., tech service providers , BB Providers,	Subject to resources	Technical assistance program provides expertise and education to community leaders and stakeholders.

Objective 2: Enabling Broadband Availability

Component (with Section 7 Reference Number)		What	Initial Leadership	Other Stakeholders & Local Leadership	Begin (Month)	Outcome
2a	Develop and circulate information package	Agree on design and approach to information package	PuADD	Providers, Local Govt., GIS person, Chambers	2-3	Agreement on content, packaging, and points of distribution at communities in project area.
		Produce and distribute package	PuADD	Local media, education sector.	2 & ongoing	Package sent to local governments, officials, and stakeholders.
2b	Promote & leverage eLearning modules	Promote eLearning & outreach activities: Webinars; presentations;	PuADD & Community Leadership	Local media, education sector.	3 - 4 & ongoing	Participation of interested individuals and stakeholders; identification of local projects.
2c	Regularly planned events	Promote/support local broadband availability initiatives, ideas, materials (see tech assistance 1i: Leadership)	PuADD & Community Leadership	Muni and county gov; utilities and Providers.	Subject to resources	Better Broadband info on services to un-served or underserved households in the project area.

2d	Leverage the Broadband Provider sub-committee	Leverage sub-committee: *regularly meet *discuss availability issues *solicit on-going input *input on information package	*PuADD Representative *Provider-appointed Leader	Providers with service in project area and others from region.	2 & ongoing Frequency TBD	*Discuss availability issues *Solicit input on information package * Begin collaboration on avail. Gaps *Review and share SBI coverage data and trends in State/Nationwide
2e	Expand participation of local internet initiatives to more communities	Build on initial project work, grow the number of participating communities, info sharing/collaboration., peer support, technical assistance.	PuADD & Work Group	Local Gov; K–12 superintendents & principals; Seniors groups; Other social services.	3 - 4 & ongoing (Subject to resources)	More community participation with interested individuals and stakeholders; identify more/new local projects.

Objective 3: Improving Internet Access

Component (with Section 7 Reference Number)		What	Initial Leadership	Others Stakeholders & Local Leaders	Begin *(Month)*	Outcome
3a	Expand the Lead Body to include IAC stakeholders	See leadership section, 1b	Purchase ADD & Working Group	Educators, Town Gov., Chambers, Commercial Bus.	2-3	Project leadership that includes IAC stakeholders and related constituent groups
3b	Develop detailed action plan	Actions, tasks, participants, rolls & responsibilities, time lines	Purchase ADD & Working Group	Current providers of access sites, Educators, Town Gov., Chambers, Commercial Business	2-3	Documented & detailed actions and tactics that support the BB plan.
3c	Conduct survey of existing sites	Design survey; collect contact information; deploy survey; gather and analyze data	Working group on public access	Current providers of access sites; Student volunteers	3-5	Identification of interested organization; obtain data on current sites – technology, hours of operation, facility, staffing, existing program information.
3d	Organize workshops for existing sites	Design and deliver educational workshops for target groups	Working group on public access	Current providers of access sites; others	3-5	Shared understanding of challenges and opportunities. Agreement to participate.

3e	Identify new Hot Spots	Identify potential Wi-Fi hot spot sites	Working group on public access	Student volunteers	4-5	Potential sites and proponents identified.
3f	Recruit organizations/sponsor groups and facilities	ID local agencies who work with target groups, discuss programing and potential facilities	Working group on public access	Current access site providers, local social support agencies, others	4-5	Stakeholder commitment to new programming, additional IAC sites identified
3g	Develop new programming/hours	Delivery of new programing and expand hours at IAC's	Working group on public access	Current access site providers, service organizations, commercial sponsors, others	Subject to resources	New programs designed for specific target groups. Increased Internet skills, adoption, and utilization.
3h	Examine alternative approaches to Public Internet Access	Explore opportunities such as Life-Line, free or low cost computers	Purchase ADD & Working Group	Community groups	Subject to resources	New alternatives identified, begin advanced action planning.

9. Metrics for Tracking Progress and Impacts

An important part of any plan is developing a means to track progress and determine impacts. Without the ability to track progress, plans can go off track without stakeholders knowing why or when. Tracking progress enables project leaders to keep on track, identify issues, and adjust the plan accordingly, while also providing the necessary accountability to OBOD for federal grant reporting.

The three **Objectives** are tied to the **Recommendations** (Section 7) which are associated with Action Plan **Components** (Section 8).

1. **Building local and regional leadership & capacity**
2. **Enabling Broadband Availability**
3. **Improving Internet Access**

Building local and regional leadership & capacity		
Metric:		***Data:***
1a	Lead regional body is established and committees defined	• Creation of organizational parameters that define structure, mandate, accountability and membership. • Endorsement of group parameters is affirmed by key stakeholders.
1b	Secure Funding Sources	• Document names, contacts status of funders approached, • Status of applications submitted • Details/terms/conditions of funds secured, and status funds to be distributed
1c	Recruited key stakeholders / individuals for community leadership group(s)	• Membership of targeted leadership group identified, invited • New individuals and stakeholders recruited to the Lead Body
1d	Delivered orientation sessions	• Number of presentations and participants (# TBD)
1e	Developed tactics to leverage State Broadband Initiatives	• Submitted & approved tactical plan
1f	Established Provider sub-Committee	• Document participants, meeting frequency & issues addressed • Over time, document solution collaboration, opportunities to fill availability gaps through partnership
1g	Organized/ implemented webinars or face-to-face workshops	• Document number of presentations, community locations, participants, ongoing meetings scheduled in project area *(# TBD)*

Building local and regional leadership & capacity		
Metric:		***Data:***
1h & i	Established peer support and technical assistance program	• Document design of program, frequency of use, issues addressed, recruitment of volunteer or contractor presenters, and assess participant program impact.

Enabling Broadband Availability		
Metric:		***Data:***
2a (1)	Completed broadband availability information kit	• Finished kit content and subsequent updated kit at periodic intervals.
2a (2)	Distribution of information kit on broadband availability and public Internet access sites to local governments and stakeholders	• Points of distribution, activity log related to community use and engagement • Number of kits distributed, plus online tracking of access to kits (if online) *(# TBD)* • Plan/prepare for v2 updates, timing, team contributors, data sources
2b	Circulation, promotion and leveraging the "eLearning Module" on community approaches to improving broadband developed by OBOD	• Number of presentations • Names of groups addressed • # of Participants, # Target Group Types, Leadership Interest, Project Interest
2c	Use of regularly planned events for local governments to promote the ideas and materials available in this plan and on the eLearning website	• Number of presentations *(# TBD)* • Names of groups addressed • # of Participants, # Target Group Types, Leadership Interest, Project Interest
2d	Leveraging Broadband Provider sub-committee and regularly meet and discuss availability issues in project area, solicit on-going input from the group on their information package (Recommendation **a**), begin broadband-specific collaboration among project leadership and Providers to improve communication, find ways to collectively improve availability.	• Document meetings, attendees, provider attendees, info exchanged, etc. • Document provider inputs on info package/overall use of package • # of availability gaps at the community level (areas w/community-based proj's) • Identify/document competitive dynamics of provider-attendees • Document provider input on concept of "collaborative" work w/providers • Document and develop availability "package" (for areas w/community-based projects) and collective provider "work plan" for problem solving.

Building local and regional leadership & capacity		
Metric:		***Data:***
2e	Development and expansion of regional approaches – growth of base of participating communities, info sharing/collaboration, peer support, technical assistance	• # of new community initiatives launched • # and type of groups involved, total team involved • # of info "bulletins" and communication activity *(#TBD)* • # of tech assistance events or responses "logged" by lead group *(#TBD)*

Improving Internet Access		
Metric:		***Data:***
3a	Expansion of Lead Body members specifically interested in Internet Access Sites	• Number of leadership and committee group members w/focus on IAC initiative *(#TBD)* • # of initiatives initiated/in-progress *(#TBD)* • Focus areas of group – geographic, programmatic
3b	Detailed action plan for low *and* high levels of efforts	• Completion of plan with specific actions and tactics
3c	Survey of existing sites	• Set survey completion goals, team rolls & goals • Periodic team calls and status reports • Document # of surveys completed, data results *(#TBD)* • "Map" results
3d	Organization of regional workshops for existing public Internet access sites	• Program types (according to target groups served) • Number of workshops and # of attendees, # of workshops by type *(#TBD)* Completed "feedback" forms from attendees
3e	Identification of potential new Wi-Fi hot spots where access centers are not viable.	• ID # of new hot spots initiatives launched at the community level *(#TBD)* • Identification of new hot spots locations completed and population served • Document broader outreach to communities in the project area for developing new hot spot initiatives • Document provider engagement in the local area

Improving Internet Access		
	Metric:	***Data:***
3f	Recruitment of locally based groups that work with target groups	• # and type of support groups engaged or established in each community *(#TBD)*
3g	Establishment of new programming	• Number of new programs, program types, target groups served, # participants. *(#TBD)*
3h	Assessment of alternative approaches to public Internet access	• Document status of each alternative -- feasibility, dependencies, implementation timeline, team input, next-steps and follow-up.

Impact Metrics

Impact Metrics measure overall benefit on Internet access and utilization in the project area. This is important to OBOD for NTIA federal grant reporting purposes and for other sponsor-funders who may become part of the effort as the project progresses. Measuring and tracking impacts allows project participants to determine whether their efforts are having the anticipated effect. For funders and sponsors, impact tracking provides critical input into future policy directions and budget allocations.

- **Improved access to broadband infrastructure - Rural**
- **Increased Internet skills, adoption, and utilization in target groups**

Improved Access to Broadband Infrastructure – Rural		Data
1	# of POPs*1* and connected areas	Number of POP's – *new *expanded hrs. *expanded services *communities served in project area
2	Connectivity characteristics of services	Documented increases in *speed, *reliability, *service redundancy, *new services, *service types
3	# of new businesses served (service available)	Stat's on Broadband service coverage (e.g. premises passed or within service area)
4	# households served (service available)	Stats on broadband service coverage (e.g. households passed or within serv. area)
5	# of anchor institutions added or upgraded (by sector)	Number and type of new anchor institutions subscribing to broadband service

1: **POP** – Point of Presence

Increased Internet Skills, Adoption and Utilization in Target Groups		Data
1	Documented increase in skills among target group	Documented assessment of skills levels and skills learned: tool to be developed.
2	Broadband adoption among program participants	Conduct survey of program participants/target groups
3	Documented increase in utilization among target group	Develop and conduct survey of communities participating in project area – quantify users/uses/usage in project area

Impact Metrics may need to shift or adjust when the detailed action plan is finalized, or if any material change is made to the plan when the project commences in the region.

Appendix I - Steps for Local Planning for Broadband Availability

The next few pages provide a detailed review of the process and tasks for local communities that want to expand broadband services in rural residential areas. It is useful to begin with some basic starting points:

- ✓ ***Begin with needs and goals, rather than solutions*** **--** Local and regional initiatives should not begin by assuming what the eventual Internet solution will look like, the appropriate scale of "build out", type of technology, type of ISP, or what the appropriate role of the local government should be. Instead, initiatives should address specific needs and the goals in the project area that ultimately lead to better solutions.

- ✓ ***Identify the specific needs and locations of the fragmented areas.*** Local needs and goals need to be supported with actual information on-the-ground that identifies problem areas and certain local asset information on a map, as well as aggregating the "demand potential" for underserved and un-served populations. This can become powerful information to empower and inform local leaders, and help facilitate ISP partnerships.

- ✓ ***Include, inform, and attract local leadership***. Local elected officials, economic development organizations, small business, and other active energetic leaders in the community. The educational sector has often played an important role in providing leadership and a clear rationale for making local broadband initiatives a priority. The educational sector has particular value with access to students who could be involved in documenting current and potential Internet service and demand.

- ✓ ***Consider Internet Service Providers (ISPs) as partners.*** A major point of feedback from Providers is that communities and local governments often see them as an "outsider" or only as a potential source of revenues, rather than as a partner in achieving community goals. Providers are a lot more willing to spend time exploring options with friendly communities than with those who place obstacles in their path. While a community may or may not find an attractive ISP to partner with, they should start by considering potential ISP partners. Facilitating a consultative relationship with ISP's as partners opens up an essential communication channel for the longer term of this project and enables the Broadband team to tap into a valuable resource of information on technology, equipment, and network maintenance & expertise – *the business of broadband.*

Step 1: Preparation

a. ***Develop leadership and capacity:*** This task is dealt with in Section 7.1. It is recommended that the local government or entity *not try at this stage* to define its specific role in delivering

broadband access. The role of the local government should emerge from the process of exploring options.

b. ***Establish preliminary objectives and priorities:*** A community's objectives and priorities regarding broadband will likely be in constant flux as the broadband infrastructure around them evolves. In past years, communities were likely to consider ambitious and larger scale initiatives, in part due to the availability of grants from federal and in-state sources and in part due the significant portions of their area that were un-served or underserved. However, in many cases un-served or underserved areas are shrinking, resulting in a smaller group of target users. As a result, the scale of initiative needed to address unmet needs may be smaller than in the past and require fewer resources. In addition, significant improvement to the quality and speeds of some technologies (notably fixed wireless) provides for options that may not have been attractive in the past.

Given these factors, an important early step in the planning process is defining the required scope of the Internet infrastructure initiative. Communities need to define the target or potential broadband users in specific terms that can be measured and mapped. Similarly, the level of broadband service desired for each group of users' needs to be defined so that it can become part of a cost / benefit and business case analysis. [17]

c. ***Collect important information and data*** that is critical to engaging potential ISP partners and assessing options. The list of data to be collected during this step can be extensive, though the effort is not necessarily difficult:
   - **Target population or organization(s):** location (including topography), number and age of households (rural residential), density, and income/budget.
   - **Vertical Assets: Towers** – if municipally owned, lease payments can be reduced or suspended to spur deployment. **High Structures** – silos, water tanks, buildings for placement of wireless equipment.
   - **Pole access**: pole owner, pole type, attachment capacity, cost.
   - **Rights of Way** – can be used to expedite/reduce cost of conduit placement
   - **Ongoing or Pending Capital Projects** – water, road construction, new subdivisions, main street revitalization, etc.
   - **Municipally Owned Utilities** - assets, customer base and back office operations can be leveraged for partnerships
   - **Land** – that can be used for tower construction/locating points of presence, etc.

[17] At its most basic level, an effective demand assessment categorizes the location and type of user, information on current broadband services (cost/type), types and bandwidth requirements of applications currently in use and applications being considered (and their bandwidth requirements).

- **Ongoing/Planned First Responder Communication Upgrades –** many of these projects involve the construction of infrastructure and upgraded communication services. If activities can be aligned it is often possible to achieve economies of scale.
- **Existing Vendor Relationships** – existing relationships can often be leveraged to provide enhanced and expanded services.
- **Existing Mapping (GIS) Resources** – to provide a visual representation of community attributes that can be used in the planning process, including prospective partners.

d. **Become an attractive partner**
   - Develop leadership within local government to cultivate a corporate culture that understands and enables partnerships that assist the community in achieving its defined goals and objectives;
   - Ensure availability of Land Use Planning and Zoning documents;
   - Review zoning requirements for impediments to broadband infrastructure;
   - Consider an expedited permitting processes for installation of broadband infrastructure;
   - Review fees and charges that may become an unnecessary barrier.

e. **Communication to community:** keeping the community informed can be important in building public support for the local initiative. Communication should start as soon as possible and provide local residents and businesses with periodic updates. The communication process can prevent inaccurate information about the initiative from circulating or gaining traction. Most importantly, experience with other communities shows that good public communication builds local support and assists in the start-up up phase, especially in terms of obtaining high take-up rates of new Internet services.

f. Preparation includes developing a method of tracking progress so progress can be measured and outstanding tasks and timelines kept in full view.

Through the preparation phase, it is important that the community establish a sense of the scale of the initiative being considered. Some broadband infrastructures may be relatively modest in scope: reaching a hundred or more rural households; or, the initiative may be very much more ambitious, such as bringing ultra-fast broadband (usually fiber) to a larger geographic area with many hundreds or even thousands of households. ***The level of preparation should reflect the anticipated scale of the project.***

Step 2: Engaging Internet Services Providers

At some point early in it community broadband planning, a community will need to engage with one or more Internet Service Providers. Initially this will be to identify the current and planned state of broadband infrastructure within and adjacent to the community. Eventually, the community will need assistance of ISPs, whether it is as the providers of new local services or for connections to the global Internet (middle-mile and backhaul).[18]

The following tasks outline the steps suggested in engaging ISPs. As each step is addressed, it has major implications for the remaining planning process. If an issue is effectively addressed at an early stage, some tasks will no longer be required. If a satisfactory outcome is not achieved, additional tasks will need to be undertaken.

a) Identify ISPs: ***In order to understand possible options it is recommended that communities identify current broadband services and infrastructure***. Knowing where the closest "backhaul" or fiber-optic cable in or near one's community is important in the planning and assessment process. ISPs can be classified in a couple of ways:
   - By their retail service footprint: There will probably be one or more ISPs within the community. In addition, there may be ISPs that serve adjacent areas and may be interested in serving additional areas; lastly, there may be regional ISPs that may not be adjacent, but who have services not too distant from the target community and may be convinced to expand to the target area. Communities should identify all ISPs that fit one of these descriptions.
   - By the type of service they sell: some ISPs may be focused exclusively on retail services (selling directly to the consumer). Other ISPs may also provide wholesale services to other ISPs.

   In identifying ISPs, it is important to include fixed wireless providers (WISPs). While this sector is still maturing, there are an increasing number of WISPs that are very agile and provide services capable of high speeds and good quality. Mobile wireless, on the other hand, while a highly desirable service, at this point is not generally considered an alternative to a dedicated broadband service due to issues with reliability, costs and usage caps. Some of these limitations may be addressed in the near future. Satellite providers are not usually considered a preferred option due to issues with quality, cost, and technological limitations.

[18] Wikipedia: "Backhaul generally refers to the side of the network that communicates with the global Internet, paid for at wholesale commercial access rates … Sometimes middle mile networks exist between the customer's own (*network*) and those exchanges. This can be a local WAN or WLAN connection, for instance Network New Hampshire Now and Maine Fiber Company run tariffed public dark fiber networks as a backhaul alternative to encourage local and national carriers to reach areas with broadband and cell phone that they otherwise would not be serving. These serve retail networks which in turn connect buildings and bill customers directly."

b) Determine Level of ISP Interest: ***once the range of ISPs that can potentially provide new or better broadband services has been established, it is recommended that communities begin the process of entering in exploratory discussions with one or more ISPs***. Completing the previous steps will help community representatives in this engagement process by giving them a clear senses of purpose, information that allows them to convey specific objectives, an understanding of important broadband terminology, and a the ability to convey the idea that the community is a willing and attractive partner.

At this point, the community needs to decide if it wishes to undertake a formal or informal process. Some communities have begun the engagement process by issuing a formal Request for Expressions of Interest (RFIs). These can be more or less detailed. Their primary objective is to identify interested ISPs, as well as the range of options that these ISPs may be able to offer. Generally it is preferred that the RFI not describe the technical solution desired, but rather should focus on the goals and outcomes. Allowing the ISPs to propose different solutions will provide the community with a fresh perspective on how its broadband goals may be achieved. The RFI should convey the information that the community has collected during the preparatory phase, together with a statement that the community is willing to consider a broad range of solutions and is willing consider assisting or partnering with the ISP in a variety of different ways.

Some communities have preferred to start the engagement process with an informal approach to one or more ISPs, usually ones that already provide Internet services to the area. In some cases, the approach may be made to a local utility that does not currently provide Internet services but has the capacity of doing so (e.g. a local or regional electrical utility or telephone cooperative). Depending on the level of interest expressed during the informal conversations, the community may choose to proceed with an RFI or alternatively to begin more detailed discussions with the interested ISP.

c) Qualify Interested ISPs: ***regardless of whether an informal or formal process is used, the community should undertake due diligence of any ISP or utility that is wishes to explore partnering with***. Due diligence would typically include confirming the organizational, technological and financial capacity of the possible partner, as well as its track record for installing infrastructure and delivering quality services.

Step 3: Refine Objectives and Relationships

Once a community or region has completed the preparation phase and collected information through the ISP engagement process, the time should have arrived for making key decisions and developing concrete plans that have defined service areas, is cost effective and is achievable within available resources. There are a number of critical key steps in this process. These steps are not necessarily sequential. Completing the following steps may be a fluid process that shifts back and forth until a satisfactory solution has been developed.

a) ***Review strategic options and set priorities***: At this point, the options should be relatively clear, though the decisions still difficult. Usually there is trade-off between costs and benefits. Hard decisions need to be made on which priorities matter most. The most attractive technology may not be the most pragmatic and cost effective solution. Alternatively, a relatively small increase in project costs may open the doors to future development. Having a longer term vision should help in setting priorities and making choices. Is the community setting itself up for a longer term involvement in a comprehensive and ambitious approach to developing broadband in the area? Or, are market forces felt to be largely effective, with the community stepping in only on the margins?

b) ***Establish a business case and estimate of resources and budget required:*** before any decisions can be finalized, a business case must be made for any investments made by the local government, even if the investment is limited to making public assets available to an ISP.
   - Develop an analysis of the costs and benefits for any investments;
   - Ensure that any proposed service or infrastructure investment is financially sustainable: will projected revenues cover expenses? Are "take-up" rates realistic? Are there contingency plans for lower revenues or unexpected costs?

c) ***Establish a partnership model***: at this point it will probably be clear what the respective roles of local government, community institutions, and ISP will be. Nonetheless, these need to be carefully considered and articulated. While there are numerous options and variations in partnership arrangements, the most common would flow from the following:
   - Community as facilitator of a service to be developed and managed by an ISP. This may include making community assets available for cost or for less than cost. This may also include becoming a long term purchaser of Internet services from the ISP (ensuring a revenue stream).
   - A public private partnership between a local government entity and an ISP. The local government may choose to subsidize the capital costs or build part of the infrastructure and lease it to the ISP. There are numerous other partnerships models. The best approach is to contact other local governments that have developed partnerships or are actively considering one.
   - Local government or local not-for-profit entity as provider: while this is the most ambitious approach, a number of communities have successfully gone down this road.

d) Other considerations:
   - "Over-building" an existing ISPs infrastructure is very costly and may be unnecessary. There should be a clear strategic advantage for this option to be considered. Such a strategic consideration could include bringing in competition, better pricing and a level of broadband that may otherwise not be developed.

- A different approach could consist of a modest extension or enhancement of the existing broadband infrastructure in the area. A community need not fix on high end solutions where more modest solutions may achieve its objectives.
- Communities should look for opportunities to piggyback lower priorities that may be very achievable at low cost and effort within the primary arrangement. An example can be found in communities that have negotiated the "free" provision of Wi-Fi hot spots in return for ISP access to vertical assets owned by the community.
- Demand Aggregation is a strategy for securing better or less expensive Internet services. Consolidating demand into a cluster of guaranteed contracts can also be used attract ISPs or as a bargaining chip in negotiations. Demand aggregation opportunities vary greatly by community.
- To the extent that a community takes on formal responsibilities for provision of Internet Services, either within a partnership or as the sole provider, it is critical that a detailed plan be created for the operation and maintenance of the service and supporting infrastructure. This plan should lay out any ongoing responsibilities of all members within the partnership.
- Development of a marketing and communication plan can help generate both public support and (where appropriate) high levels of subscriptions ("take rate"). High take rates play an important role in generating initial cash flow as well as a financially sustainable broadband service.

Step 4: Make Commitments

Once a community or local government has decided on its course of action, the final steps of securing funding and negotiating contracts must be undertaken with due care.

a) ***Securing funding:*** Funding may or may not be required to execute the planned Internet infrastructure project. In some communities, the facilitated process and access to public assets has been sufficient to entice an ISP to build the required infrastructure. To the extent that funding is required, a number of options exist:
   - Aggregating existing demand and purchasing power in the form of guaranteed contracts can be used as part of a long term financial arrangement with an ISP. This will require organizations to collaboratively commit budget allocations to multi-year contracts. The contract should be based on provision of specified services and service levels.

   - ***Access grant opportunities:*** granting programs for broadband are currently in flux. At a national level, stimulus funding for broadband is coming to a close. However, the Connect America Fund (http://www.fcc.gov/document/connect-america-fund-1) and Rural Utilities Service (http://www.rurdev.usda.gov/RUSTelecomPrograms.html) continue to provide federal grant opportunities. The Connect America Fund is still in its

early stages and its rules are not yet settled. These funding sources may be attractive to larger projects, for established ISPs or for ISP's with certain technologies. For smaller initiatives, the level of administration required by the funding sources may make them inappropriate. The evaluation of grant opportunities and other financing options should be one of the preparatory steps carried out by the leadership group.

- ***Funding mechanisms of Kentucky*:** the Kentucky Infrastructure Authority (KIA) provides a mechanism for funding construction of local public works projects.

- ***Commit funding:*** once funds have been secured, a process is required to commit any public spending directly on a broadband infrastructure project. The committing of public funds must be done in a transparent, effective, and efficient manner. This document does not deal with this issue. Nonetheless, should public funds be required, the community must be ready to undertake either a Request for Proposals (RFP) or Direct Award. It may also require skill to enter into complex contract negotiations with ISP's.

Appendix II: List of Resources

This section provides an inventory of financial resources available to stakeholders undertaking activities recommended in this plan. This list of resources will change over time as priorities, mandates, and budgets of funding organizations change. Stakeholders will need to update and supplement this resource list. It is highly recommended that stakeholder contact prospective funders to review funding availability, criteria, and timelines.

Warm

Delta Regional Authority (DRA) -- http://dlg.ky.gov/news/gradd+dra.htm -- This is a press release is from the ConnectGRADD project back in 2009…relates to this approach. Find more: http://www.dra.gov. Investigate an initiative (Started in 2007) called the **iDelta**- http://www.dra.gov/initiatives/idelta.aspx.

Murray State University Regional Outreach -- http://www.murraystate.edu/outreach -- In its fifth year. The Regional Outreach Grant Program provides seed money for new and innovative educational programming for west Kentucky youth and adults.

Innovation and Commercialization Center -- Paducah, Ian Blanche, Director. Website: http://entrepaducah.com. Funding from http://www.thinkkentucky.com/dci/

Local Government Economic Development Program (LGEDP) -- http://dlg.ky.gov/grants/stategrants/coaldevelopment.htm -- Provides grants of coal severance and processing tax revenues to coal-producing counties, commonly referred to as the Local Government Economic Development Fund (LGEDF), "to assist eligible counties in diversifying their local economies beyond coal production and meet other community development needs"

Kentucky Infrastructure Authority (KIA) – Infrastructure loan programs: http://kia.ky.gov/loan/ --
Fund B: http://kia.ky.gov/loan/fundb.htm (Leg. Appropriation)
Fund C: http://kia.ky.gov/loan/fundc.htm (Bonds) – Application:
http://kia.ky.gov/NR/rdonlyres/B367C47F-F1F0-444F-A9B1-E3AF505A71B0/0/FundCApp090110.pdf

USDA Farm-to-School Grant Program --
http://www.grants.gov/search/search.do;jsessionid=grbyRpjYjpTFpY1f4TLlCm81whPlzb3x9Pp2qpBBZGJflLjJdyQ6!-804278280?mode=VIEWREVISIONS&revNum=0 (NOTE: Matching requirement)
"USDA anticipates awarding up to $5 million in grant funding to support efforts that improve access to local foods in eligible schools"

U.S. Economic Development Agency –
Public Works and Economic Adjustment Assistance Programs
http://www.grants.gov/search/announce.do;jsessionid=5mDyR3wWJRFN74fTPlLk1BjqKjfy9lLqmhVnFmRGKx1ymJ3BqQHd!286685741 ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY … ,
EDA provides strategic investments that foster job creation and attract private investment to support development in economically distressed areas of the United States. Under this FFO, EDA solicits applications from both rural and urban areas to provide investments that support construction, non-construction, technical assistance, and revolving loan fund projects under EDA's Public Works and Economic Adjustment Assistance programs. Grants made under these programs are designed to leverage existing regional assets to support the implementation of economic development strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities.

Worth Tracking --

US - DoD Injury Prevention, Physiological and Environmental Health Award (IPPEHA) --
http://www.grants.gov/search/synopsis.do;jsessionid=N0GKRppGJQwpkhgwR2XwL5PyvTjsQZSzph9qzMV6Pps11hmg5CHB!-804278280
NOTE: This is NOT a specific grant for a Broadband initiative, but the **Telemedicine and Advanced Technology Research Center(TATRC**), located at Fort Detrick, Maryland, is administering this grant. This group should be followed closely for applicable initiatives in the future.

Corporation for National and Community Service – (Grant $5m)
School Turnaround AmeriCorps FY13
http://www.grants.gov/search/School%20Turnaround%20AmeriCorps%202013%20Notice%20of%20Federal%20Funding%20Opportunity
The mission of the Corporation for National and Community Service (CNCS) is to improve lives, strengthen communities, and foster civic participation through service and volunteering. CNCS—through its AmeriCorps and Senior Corps programs and the Social Innovation Fund—has helped to engage millions of citizens in meeting community and national challenges through service and volunteer action.

Appendix III: Contributors to this Plan

This Plan was developed over a ten month period by a team that included the Commonwealth of Kentucky Office of Broadband Outreach and Development (OBOD), the Project Area Working Group for West Kentucky, the Kentucky Council for Area Development Districts, Michael Baker Jr. Inc., and Strategic Networks Group.

In the West Kentucky region's project area, consisting of the Ballard, Carlisle, Hickman, Fulton Area Development Districts, this regional planning process was initiated in May 2012 with the active involvement of the Area Development Districts as regional leaders. From May 2012 to February 2013, the planning process progressed through a series of conference calls and two stakeholder workshops in October 2012 and February 2013.

During this process a broad range of stakeholders throughout the three ADD regions were contacted about the Broadband planning initiative. Many were invited to provide input and participate in the two workshops.

Appendix IV - IPA Workshop Meeting Notes: West Region

October 22, 2012

This document provides an overview of the issues discussed during a broadband planning workshop held in the West Region of Kentucky, focusing primarily on the Purchase Area Development District. The document concludes with an "Outcomes" summary that identifies the goals and objectives agreed to by the end of the workshop. This documents draws on notes taken by KCADD, Baker and SNG staff. Brian Kiser convened the meetings and introduced the project team members and working group members before asking attendees to introduce themselves around the room. Kiser provided a brief history of the inception of the Commonwealth Office of Broadband Outreach & Development, including its mission statement, goals, and current involvement in presenting to legislative bodies.

Kiser explained that the purpose of the planning process is to identify and engage stakeholders, identify the priorities of the region, and engage Internet services providers. He also summarized the challenges that Kentucky faces in Broadband adoption and utilization. Having Broadband available to homes and businesses does not ensure it is being used effectively to improve the way we live and work. At this juncture, the planning process turned to the ADDs and regional stakeholders to allow them to determine the goals and objectives for the region.

Jennifer Beck-Walker presented the West Region Working Group's Scope of Work (SOW) document. Beck-Walker explained that when the OBOD asked the ADDs to write the SOW, they were asked to choose a project area based upon an area where there was a measurable broadband need that could be addressed with the involvement of committed stakeholders. The four Mississippi River counties of Carlisle, Hickman, Fulton, and Ballard were selected because of their apparent lack of access to affordable broadband for households. As the working group continued to investigate the situation, they discovered an alarming lack of public access to Internet services for those citizens in the area that cannot get broadband in their home or cannot afford to subscribe to it. In the Regional Profile provided by OBOD's subcontractors, Baker and SNG, the Working Group learned that K-12 schools in the area are already adopting advanced Internet processes at a level consistent with their counterparts across the state. As the primary industry already adopting advanced processes and as a critical community anchor institution in the area, the Working Group determined that any efforts addressing broadband access or use would necessarily involve the school systems. Beck-Walker reported that at this juncture, the stakeholders present in the room were being asked for input and commitment to assist in the goals going forward.

Bill Bates then provided technology and trending information relating to regional broadband availability, project goals, changes in provider participation over the past two years, and data on users, usage, and uses.

Derek Murphy then presented information relating to the regional survey data from March 2012. Murphy then informed the group that the goals for the day's workshop would be creating a vision, goals, strategies for achieving those goals, action items, and other strategies for implementing the action plan. Various fixed wireless providers present noted that if local areas wanted to help them in assessing the cost and possibilities of serving areas, a list of potential vertical assets would be very helpful, including foliage estimates. A representative from Fast Net Wireless noted that they usually hesitate to consider applying for grant funding because of the red tape involved. Q Wireless noted that in working with Green River ADD, they were able to take advantage of grant money without the red tape and found that partnership to work very well for both the ADD and the provider. Fast Net representatives also noted that they have contracted and delivered several county hot spots that were either provided by the city or the county in other areas. They reported having good experiences in working with local officials in doing this work.

The plenary session identified two main objectives for this planning process:

1. Create access to reliable broadband connections in currently un-served and underserved rural areas by focusing on provider-centered partnership for potential build-out;
2. Work with stakeholders to address public access points for citizens who either cannot currently get broadband in their homes or cannot afford to subscribe to broadband.

The group broke for lunch and reconvened at 1 p.m., splitting into two breakout groups—one to address availability needs and one to address public access points.

Public Access Group

1. Many households can't participate in educational and entrepreneurial support programs because they lack or can't afford Internet service. This is a major barrier to increasing the skills and income opportunities for residents in the region.
2. Many Internet access sites are resource poor and have extremely limited hours of operations. Rural libraries were cited as one example.
3. A couple of participants felt that public schools were not a promising base for establishing public access centers, in part because they were more closed than collaborative and the schools presently have limitations on their hours of operation.
4. The group agreed on the following objectives:
    - Initiate a process of developing Internet Access Centers as vehicles to achieve higher levels of adoption and utilization;
    - Access Centers can be an important vehicle in providing education for entrepreneurs and support staff (maybe Best Practice Modules).
    - Need to develop sustainable business model for access centers. This may include funding from foundations.

- The key to developing and sustaining public access centers is a strong and collaborative Leadership team (consisting of strong individuals and key institutions); this planning process needs to develop a work group to start working thru implementation planning.

Availability Group

Participation in the breakout session included Internet Service Providers, ADD business contacts and Stakeholder/citizens. Those who participated had interest in broadband access and availability for the focus area, to gain a better understanding of the business of broadband: how the Providers operate their business, the limitations of technology types, and criteria for household and business services and how decisions are made.

Criteria and attributes for considering service or new service expansion:

- Broadband subscriber **density** in area -- Institutional, CAI's, Residential, Business, Gov.
- Geography / Topology
- Middle-mile Info, Head-end/Hub Location Points
- Providers presently operating in the area
- Network considerations for Providers / Criteria for Households(H) & Business(B):
  - Capacity / Speed / Latency / Symmetric Service
  - Service Redundancy (B) / Service Quality
  - Entry Cost (For HH's and the ROI for Teleworkers)
  - Demand for "Enterprise Class" Service (B)
- Technology options in the area
  - Cost/timing of fiber network expansion (a limiting factor)
  - Fixed-Wireless may likely provide a faster way to bring service in underserved areas
- Understanding the "partnership potential" of an area
- Land ownership, parcel boundary, business zoning or districts, ROW access -- location
- Public / Private Structures
  - Pole access -- Pole owner, Pole Type, Attachment capacity, Cost, Permitting/Licensing process, Speed-of-attachment (bureaucracy)
  - "Vertical Assets" – Existing towers or buildings where wireless or fixed-wireless equipment may be deployed to reach new customers; Including private-sector tower assets in the region --Co-location towers expensive, Interference with cell antenna
  - Private-sector tower assets in the region -- Crown Castle, American Tower
- Fostering a competitive environment can bring down user costs and encourage continued investment in upgrading broadband infrastructure
- Costs of customer acquisition – equipment, maintenance, installation
- Government rules/requirements/reg's/constraints –
  - Muni/County/Regional: Established department(s)? Points-of-Contact?
  - Business "guidelines" or processes: documented and in place?

- RFI / RFP: Value-based? Cost-based? Criteria defined? Is the decision/evaluation process defined, open and fair (People/Committee/Processes)?

Business Models for Broadband:

- GRADD Model: Public/Private Partnership -- ***Connect GRADD Inc.***
  - GRADD owns infrastructure assets
  - Business Partner operates/maintains network (Q-Wireless)
  - Board of Directors oversight (7 County Judges)
  - Leverage Steering Committee
  - State funding
  - Local investment funding
  - Monthly subscriber fees
  - "RIFR" Contract for business partner

- Private-Sector / "Demand-Motivated" Model – ***Work with Providers***
  - Identify area demand-potential of Broadband
  - Develop and provide value-added information "tools"
  - Encourage/engage Providers in an "information-gathering" or formal RFI process, to get input more expert input on technology and network
  - Define an open and fair proposal process – research/identify/include best-practice ideas from other regions; other States.

- Franchise Model – ***Similar to technology franchises elsewhere***
  - Defined territory
  - Longer-term contract to ensure reasonable ROI for network investment
  - Caldwell and Lyon Counties were able to get DRA funding for the initial costs of build-out, allowing the providers to rent the equipment from the county as part of a franchise agreement. The group was interested in this idea and wanted to consider pursuing it as a viable option for the area.

- "Hybrid" Model – ***In a changing economy still in recovery, are there variations to above models worth considering***
  - What would be the "mix" of public-private participation?
  - Funding –Private capital? Public capital? Combination?
  - Other incentives/offsets –Installation subsidy? Equipment subsidy?

Outcomes

This section reflects areas of agreement on goals and objectives going forward. Given the structure of the planning workshop many of the objectives are general or preliminary in nature. The planning

process will be responsible for taking these Outcome Statements and turning them into a Broadband Plan for the region. The planning process will consist of teleconference calls of the West Region Working Group and production of a draft Broadband Plan by the Baker / SNG team. The resulting draft Broadband Plan for the West Region will be presented to a stakeholder workshop in February or March for discussion, amendment and adoption. The draft plan will begin to address the implementation by identifying specific tasks, timelines, cost/benefit statement, outcome measures, and responsibilities. If any area is not completely addressed in the draft plan, they will be addressed at the stakeholder workshop.

Build a Strategic Plan for Internet Access Centers

Expand Work Group to include stakeholders specifically interested in developing and/or supporting Internet Access Centers;

I. Provide a high level strategic plan for development and maintenance of Internet Access Centers.
II. Identify and allocate tasks and responsibilities.
III. Explore funding sources for both the development and maintenance phases.

Develop a Strategic Plan for Broadband Availability

IV. A strategic plan will be developed for production of detailed and targeted information needed to initiate efforts that address broadband access and availability, while also engaging Providers in identifying and developing solutions. The plan will provide tools to assist local governments and stakeholders in developing a "kit" of information with resources specific to broadband, with defined technical service levels and requirements to make it easier for Providers to understand the business needs.
V. The Strategic plan will identify complementary efforts to these regional efforts :
    - Demand Aggregation
    - Business Surveys
    - CAI identification & inventory,
    - WiFi Hot-Spot strategies
VI. Connected to the above, the plan will provide strategies for developing the leadership needed to build capacity for sustaining ongoing efforts over time.
VII. More thorough information is needed to gain an understanding of different business and ownership models and the elements involved. The strategic plan will provide examples of successful Broadband business models for use in un-served or underserved areas, as well as sample legal documents such as RFIs, RFPs and water tower leases;
VIII. Funding is a critical component to the West Region Plan, regardless of the model involved. The Plan will identify possible funding sources to enable a sustainable effort over time.

Appendix V - Project Area Scope of Work

Name of Region WEST **Name of Project Area** PURCHASE RIVER COUNTIES

Planning and Outreach Priorities	Broadband planning and outreach priorities for this Project Area: 1. Availability 2. Adoption
Project Area Boundaries	Boundaries for this Project Area: 4 Purchase Counties: BALLARD, CARLISLE, HICKMAN, FULTON
Priorities (Sector/Geography)	Priority sectors and/or geographies for focus in this Project Area: 1. Education 2. Household/Residential Use
Availability, Adoption, Utilization Gaps	Broadband availability, adoption, or utilization gaps for focus in this Project Area: 1. Places with no BB Availability 2. Limited Adoption, where there is BB 3. Gaps in utilization of all sectors
Project Area Working Group Membership	Individuals who have agreed to be members of this Project Area Working Group: 1. 5 SCHOOL SYSTEMS 2. BB PROVIDERS 3. ELECTED OFFICIALS 4. ECONOMIC DEVELOPMENT PARTNERS 5. 3-ADD
Project Area Working Group Chair	Individual who has agreed to chair this Project Area Working Group: Jennifer Beck Walker
Next Steps	Next steps and timeframes guiding the work in this Project Area: 1. Regional Group Meeting – June 2012 2. Stakeholder Group – July 2012

** If additional space is required, please attach additional pages to this template. **

Approved: **May 31, 2012 - KY Broadband Central Planning Session Jennifer Beck Walker**
Project Area Working Group Chair

Project Area Focus

- 4 Purchase Counties: BALLARD, CARLISLE, HICKMAN, FULTON
- Primary Focus: Adoption, with emphasis on education system and non-adopting households.
- Secondary Focus: Availability of broadband: confirming un-served and underserved areas. Developing strategy for un-served areas.

Project Area Profile: (Baker/SNG Team responsibility)

The task will be to develop a project area profile, drawing on data in recent reports.

a) Identify predicted level and characteristics of non-adoption by households.
b) Identify main barriers to adoption and preferred means of acquiring Internet skills.
c) Analysis of education sector's role in utilizing broadband (elementary, middle, high school).
d) Identify any data on CAIs that offer availability in both served and un-served areas.
e) Confirm data on availability – identifying if areas shown to have no availability on maps accurately capture on-the-ground reality. (Working Group assistance in this area is needed)

Stakeholders Recruitment: Identify, contact and recruit stakeholders for Initial Planning Session (Sept)

- Make personal contact with key stakeholders to ensure availability and participation
- Send written workshop invitations (and personal calls if time and energy permit)
- Send Invitations to pre-workshop Webinar

Types of Stakeholders to be Recruited

a) Broadband Adoption
    - Education (K – 12)
    - CAIs (libraries, seniors' centers, others)
    - Agencies serving lower income and elderly households
    - Local governments
    - Affordable Internet for lower income households
b) Broadband Availability in Rural Areas
    - ISPs and WISPs with services in project area (4 counties)
    - Local governments

Logistics

a) Identify and confirm Initial Planning Area (IPA) Workshop date and location
b) Identify how invitations will be sent out, including follow-up and registration process.
c) Other logistics: refreshments, audio-visual aids, etc.

Purpose of Initial Planning Area (IPA) Workshop in September

a) General awareness and education around broadband availability, adoption and utilization
b) Presentation of Project Area Profile
c) Discussion and issue identification within two focus areas: adoption and availability (two break-out groups).
d) Priority setting within focus area by break-out groups
e) Identification of general strategies for dealing with priority issues

Appendix VI - Project Area Profile: West Kentucky

This section provides a profile of Internet utilization in the West Region, consisting of the Purchase, Pennyrile and Green River Area Development Districts. Most of the material is taken from the Kentucky e-Strategy Report and consolidated into one area-specific profile. Additional data is provided for the Purchase ADD, where available. For context in prioritizing regional planning activities it is important to consider the overall profile of the population and economy of West Kentucky.

Figure 1: Demographic and Economic Profile

Households	Purchase ADD	West Region	Kentucky
Population	196,393	629,170	4,339,367
Median Household Income	$38,027	$39,030	$40,061
% in Poverty	18.4%	17.5%	18.4%
% of Population 65+	17.1%	15.4%	13.3%
Organizations			
Establishments	4,676	13,268	90,511
Employment	71,646	199,490	1,480,658
Annual Payroll (in billions)	$2.28	$6.38	$51.44
Average Size of Employer	15.3 employees	15 employees	16.4 employees
USCB County Business Patterns 2009			

The West region and Purchase ADD have slightly below average (median) income and an older age profile compared to the State. The Purchase ADD has proportionally 28% more people 65 and older compared to Kentucky as a whole. At 16.8% of employment and 22.5% of payroll, manufacturing plays a large role in the West region. The manufacturing sector consists of primarily larger establishments, with only 5.1% of all businesses classified as manufacturing. The eight largest industries, ranked by annual payroll, that collectively represent over 75 percent of the economy in West Kentucky are:

Figure 2: Largest Economic Sectors in West Kentucky

Rank	Industry Sector	Percent Employment
1	Manufacturing / Processing	16.8%
2	Health Care & Social Assistance	16.3%
3	Retail Trade	15.2%
4	Accommodation & food services	9.9%
5	Construction	5.2%
6	Wholesale Trade	4.6%
7	Other services (exc. public admin)	4.5%
8	Transportation & Warehousing	3.8%
	% Employment	76.4%

% of Payroll	71.5%	% of Establishments	79.4%

Figure 3: Age Profile of West Kentucky

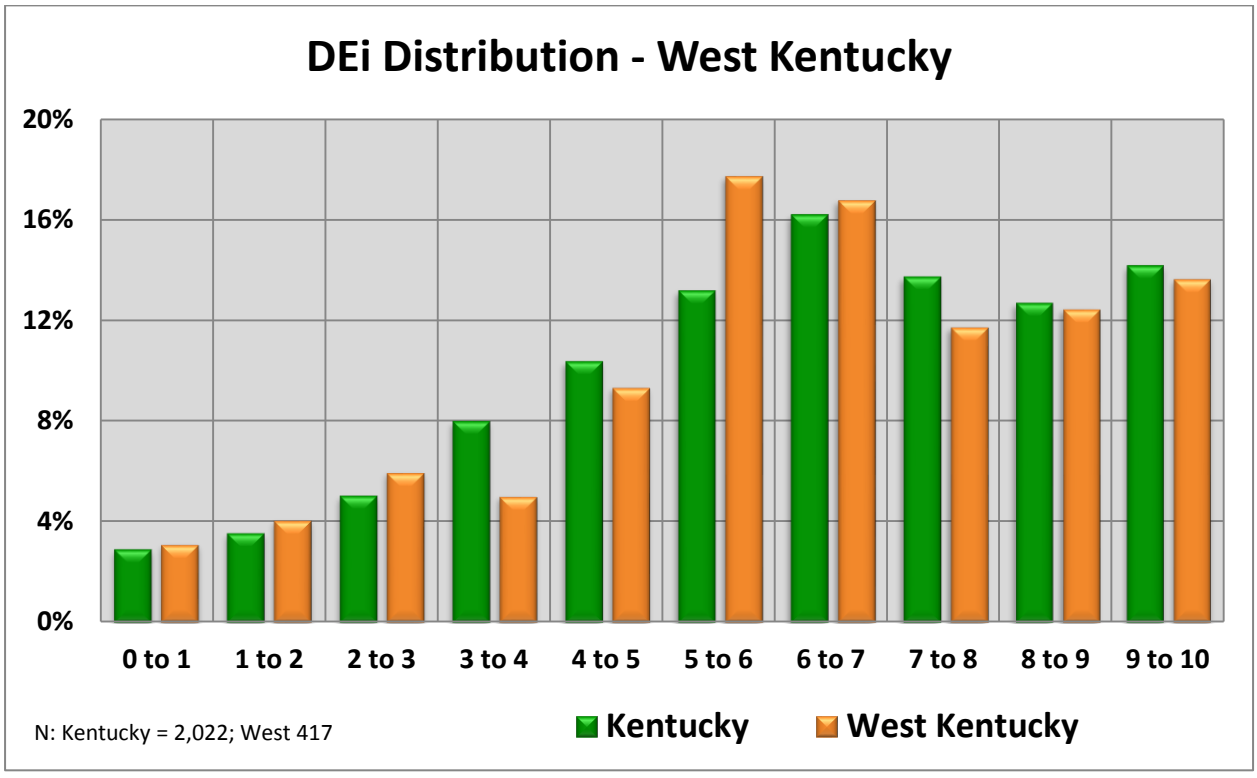
Age Distribution of Adults	West	Statewide
18 to 34 years	21.8%	22.6%
35 to 49 years	19.4%	20.7%
50 to 64 years	20.0%	19.8%
65 years and over	15.4%	13.3%

Utilization by Organizations in West Kentucky

Internet utilization by organizations in West Kentucky is moderately lower than the state average. The overall Digital Economy Index (DEi) for West Kentucky is 6.31 compared to the statewide DEi of 6.41 (based on 458 responses). This ranks West Kentucky fourth out of the five regions. The Purchase ADD, however, has an above average utilization (DEi of 6.51 - based on 166 responding organizations). The West Region's profile of utilization levels from low (1) to high (10), mimics statewide patterns (Figure 5).

Median DEi Score			
Kentucky	***West Kentucky Region***	***Ranking by Region***	**Purchase ADD**
6.41	*6.31*	*4 of 5*	6.51

Figure 4: Range of Internet Utilization by DEi



There are significant differences in how various industries utilize the Internet. One of the most important of these is the size of an organization, which impacts an organization's ability to adopt and benefit from more difficult e-solutions. Smaller organizations have lower levels of Internet utilization as can be seen in the following table:

Figure 5: Internet Utilization by Employment Size: West Kentucky

Organizations: Employment Range	Kentucky	West Kentucky	Sample Size West Kentucky
1 to 4	5.83	5.92	121
5 to 49	6.41	6.21	195
50 to 99	6.80	6.94	36
100 or more	7.38	7.57	32
All Size Ranges	6.41	6.31	394

Smaller organizations have significantly lower DEi, creating a marked opportunity to increase utilization levels. This is particularly relevant since organizations with 1 to 49 employees represent 95 percent of organizations in West Kentucky.

Figure 6: Share of Labor Force by Size of Organizations

Number of Employees	West Kentucky
1 to 19	85.9%
20 to 49	9.1%
50 to 99	2.7%
100 to 499	2.1%
500 or more	0.2%

It is very informative to look at which industry sectors in West Kentucky vary in their Internet utilization levels from state-wide averages and how they compare to the other four regions. The following industries show relative **strength or weakness within West Kentucky** in terms of Internet utilization levels based on DEi and how that sector compares to other regions in Kentucky. The ranking of industries across regions is particularly informative, since this tracks competitiveness and relative performance.

Figure 7: Strong and Weak Utilization by Industry Sectors

Region	Strong (High DEi or Ranking)	Weak (Low DEi or Ranking)
West Kentucky	• Retail Trade • Educational Services	• ***Professional & Technical Services*** • ***Information Services*** • ***Financial & Insurance*** • Manufacturing • Health Care & Social Assistance

The following table summarizes utilization for major industries within West Kentucky (according to DEi scores) compared to the state average, as well as the region's ranking among the five regions.

Figure 8: Summary of Utilization Levels by Industry Sector

Major Industry Category	Statewide	West Kentucky	Rank Compared to Other Regions
Finance & Insurance	7.5	7	5
Information	6.9	6.2	5
Educational Services	6.7	6.8	1
Manufacturing / Processing	6.6	6.1	4
Retail Trade	6.4	6.9	1
Other services (exc. public admin)	6.3	6.6	2
Professional & Technical	6.2	5.3	5
Wholesale Trade	6.2	5.9	3
Construction	5.8	5.7	3
Health Care & Social Assistance	5.7	5.8	3
Public Administration	5.2	5.1	4

Opportunities and Gaps Based on Utilization

The following is a list of industries that show the largest gaps in utilization for West Kentucky, grouped into 2 gap level categories. Everything else being equal, the largest gaps present the greatest opportunity to increase utilization. Prioritization should also consider industry size and growth potential.* In West Kentucky areas that have the greatest gaps in utilization, while also being growth sectors, are: manufacturing (the region's largest sector) and Professional and Technical Services.

Figure 9: Gaps and Opportunities for Increasing Utilization by Industry Sector

Major Industry Category	West	Sector Size - Rank	Growth Expectation*
Manufacturing / Processing	-0.48	1	↑
Health Care & Social Assistance	0.11	3	↑
Retail Trade	0.57	2	↑
Construction	-0.09	5	↑ ↑
Wholesale Trade	-0.3	6	↑
Finance & Insurance	-0.45	9	
Professional & Technical Services	-0.97	11	↑ ↑
Information	-0.71	13	↓
Public Administration	-0.08	n/a	
Gap 1 (0.6 or more below the state DEi)	2		
Gap 2 (0.6 to 0.3 below statewide DEi)	3		

**To assess growth potential, this profile uses projections made by Moody Analytics. The arrows in the right column indicate projected growth or decline. The double green arrows indicate areas with significantly higher growth expectations.*

Barriers to Utilization

Barriers to utilization are those factors that tend to inhibit or prevent effective adoption of Internet-enabled applications. Barriers for organizations in West Kentucky are similar to the rest of Kentucky, with privacy, slow Internet and lack of internal expertise the most frequently cited. Barriers for organizations in the Purchase ADD are very similar to the West region.

Figure 10: Barriers to Adopting Internet Applications and Processes

Barriers to e-Solutions - % Saying Important	West	Statewide
Privacy concerns	**73.4%**	71.4%
Available Internet is too slow	**58.1%**	59.2%
High cost of development/maintenance	**46.5%**	45.8%
Loss of personal contact with clients	**46.2%**	45.1%
Lack of internal expertise and knowledge	**43.3%**	45.8%
Suppliers not ready	**43.0%**	41.5%
Security concerns	**32.5%**	28.7%
Uncertain about benefits	**32.2%**	28.7%
Products not suited to Internet sales	**26.1%**	24.9%
Internal organization resistance	**25.0%**	24.6%

Impacts from Increasing Utilization

Increased utilization by organizations results in increased revenue and job creation. Increasing an organization's DEi by 1.0 is roughly equivalent to adopting two new utilizations, preferably in more sophisticated types of utilizations that tend to be adopted by high utilization organizations. The increased revenues can take one or two years to materialize, but would directly increase regional GDP and have additional indirect and induced effects on the regional economy.

New jobs would also be created from growing businesses. While total job growth is difficult to predict and is not exclusively driven by Internet utilization, e-solutions benchmarking data for Kentucky show that 34.3 percent of new full-time jobs were attributed to commercial businesses' use of the Internet. Results reported by commercial enterprises in West Kentucky were more modest, but still impressive at 33.3 percent.

Figure 11: Job Creation and Internet Use in Commercial Enterprises

Region	Total Employees	New Jobs Created*	New Jobs Attributed to Internet	% of New Jobs Attributed to Internet*	Number of Reporting Establishments
West Kentucky	3,326	415	138	33.3%	81
Kentucky	15,657	1,731	593	34.3%	401

Households in West Kentucky

Utilization of the Internet by households in the West Kentucky is slightly lower than the state average. The median Digital Economy Index (DEi) for households in West Kentucky is 6.22 compared to the statewide DEi of 6.35. Notably, the Purchase ADD has a higher median utilization that both the West Region and Kentucky as a whole. This pattern is similar to utilization levels by organizations, where the Purchase ADD scored higher than both the West Region (of which it is part) and the state.

Figure 12: Utilization by Households: DEi Score and Regional Ranking

	Median DEi Score	Rank	Difference from State	Households in Sample
West Kentucky	6.22	3 (Tied)	-0.13	1030
Purchase ADD	6.47		0.12	296
Statewide	6.35			4,122

Demographic Effects on Utilization

There are a number of factors that contribute to higher household utilization in West Kentucky. With a slightly older and slightly less affluent population, it is no surprise that West Kentucky has households with lower than average computer skills and lower than average utilization. Households in Purchase ADD rated their computer skills to be similar to the West Region. In general, Internet utilization is lower for older age groups and for lower income groups. Utilization levels are also directly proportional to computer skill levels which in turn are associated with older age and lower income groups. However, households in the Purchase ADD have significantly higher Internet utilization than what would normally be expected given the high numbers of seniors and slightly lower than average incomes.

Figure 13: Impact of Age and Income on Internet Utilization

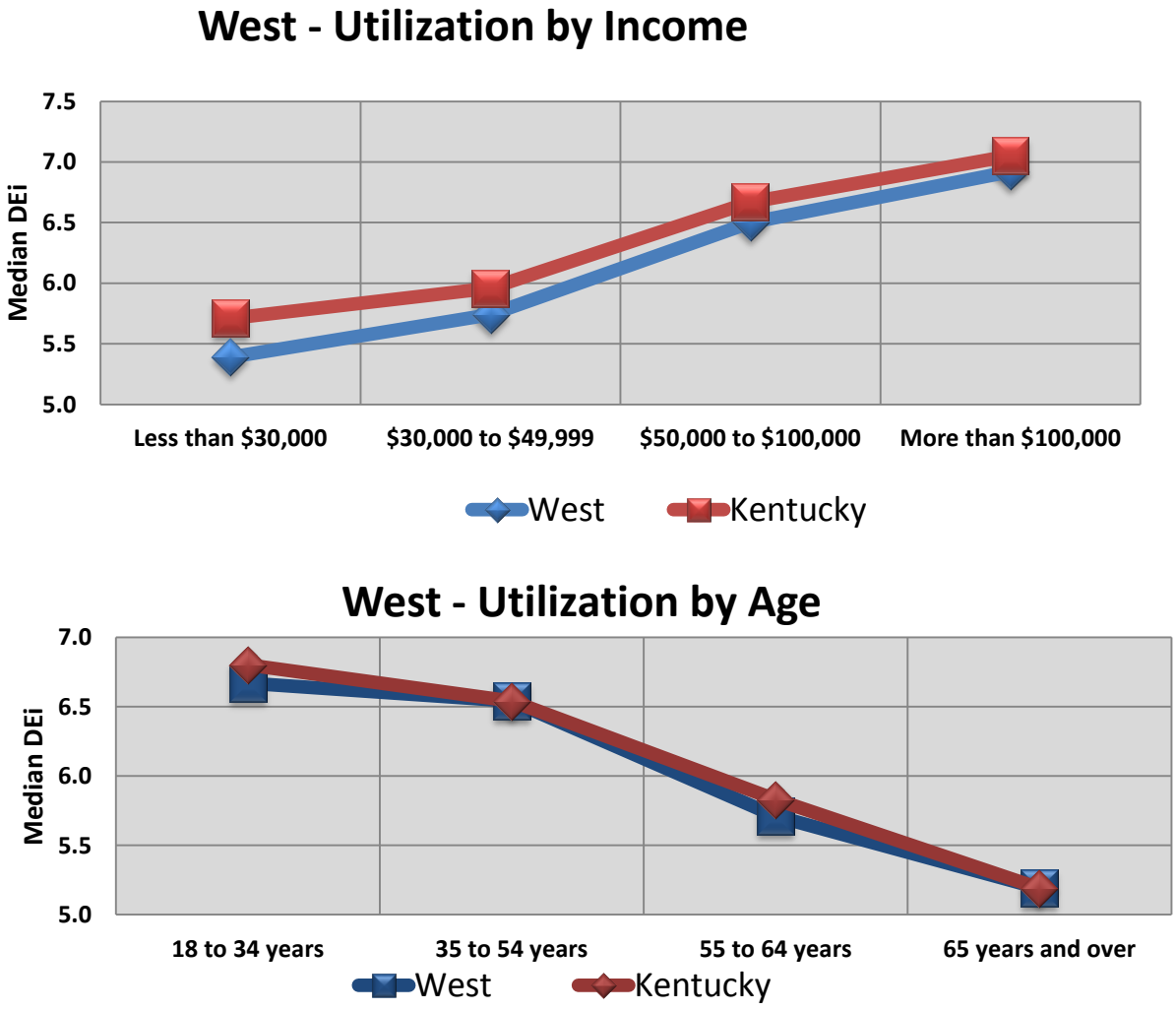
West Kentucky	Household Income			
Respondent Age	Less than $30,000	$30,000 to $49,999	$50,000 to $100,000	More than $100,000
18 to 34	**6.12**	**6.89**	**6.74**	**7.47**
35 to 54	**5.21**	**5.85**	**6.63**	**6.92**
55 to 64	**4.90**	**5.27**	**5.90**	**6.00**
65 years and over	**4.76**	**4.42**	**5.52**	**5.63**

Figure 14: Computer Skill Levels

	Expert user	Use computers with confidence	Know the basics
West Kentucky	22.4%	62.3%	15.0%
Statewide	25.6%	59.9%	14.1%

West Kentucky households face the same statewide issues of relatively low utilization by those over 55, with lower incomes and poor computer skill level. As a factor that can be addressed through broadband support initiatives, targeting computer skill development at these groups is a clear priority and likely to have the greatest impact on increasing utilization and consequently on the ability of households to earn income and access government services.

Figure 15: Internet utilization Levels by Age and Income



Use of Internet for Productivity

In terms of productivity, households in the West region show below average utilization for work oriented activities, including telecommuting, training, and accessing their work place from home. In contrast, households in the Purchase ADD have higher than state averages for using the Internet for home-based businesses, telecommuting and education and training.

Figure 16: Percentage of Households Using the Internet for Productivity

West Kentucky	West Kentucky	Statewide Average	Variance from State Average
Accessing workplace	52.0%	55.6%	-3.6%
Home business	19.5%	20.8%	-1.3%
Teleworking	15.8%	20.8%	-5.0%
Education or training	42.2%	45.9%	-3.7%

	Purchase ADD	Statewide Average	Variance from State Average
Accessing workplace	54.4%	55.6%	-1.2%
Home business	22.1%	20.8%	1.3%
Teleworking	22.5%	20.8%	1.7%
Education or training	46.9%	45.9%	1.0%

Focus on Project Area Priorities

The West Region has identified adoption and utilization as their priority focus, especially among the younger population. This profile provides some insights into the performance of the region in the areas of K – 12 schools and sites for public access to the Internet. Readers should keep in mind that the sample sizes for K – 12 schools and public access sites are relatively small and should be used with caution. Nonetheless, the data on these two priorities areas is suggestive and worth consideration.

K – 12 Schools

Twelve K – 12 schools from the Purchase ADD area and 31 schools from the West region responded to the state broadband utilization survey. The survey included both generic questions to determine general patterns of Internet use, as well as a small number of customized questions for those organizations that identified themselves as educational institutions. On average, schools from the West Region were similar to their peers across the State in their use of generic Internet applications and processes. However, West region schools showed a distinctly higher utilization of Internet applications and process patterns specific to the educational sector. These include such areas as: online delivery of instruction; marketing and recruiting students; and remote data entry. The twelve schools from the Purchase ADD

had a distinctly higher use of generic Internet applications, compared to the average from both the state and the West region. For specialized educational uses, schools in the Purchase area showed a similarly higher level of utilization than the state average, except in the area of online delivery of instruction.

Public Access to the Internet

The statewide survey made an effort to identify sites that provide public access to the Internet through computer terminals and free on-site Wi-Fi networks. Fifty seven organizations stated that they provided such services in the West Region. Twenty four of these were from the Purchase ADD.

What is evident from the reported data is that facilities in the Purchase ADD have more restricted hours than most facilities across the West region and across Kentucky. Admittedly this conclusion is based on a relatively small sample. However, if the data is representative of the situation in the Purchase ADD, consideration should be given to extending hours of public access to evenings and weekends.

Figure 17: Hours of Access to Public Internet Facilities

West Region		
Availability of Public Access Facilities	% of Establishments	# of Establishments
Weekdays	98.3%	57
Evenings	44.8%	26
Weekends	36.2%	21

Purchase ADD		
Availability of Public Access Facilities	Pct. Establishments	# Establishments
Weekdays	100%	24
Evenings	33.3%	8
Weekends	25.0%	6

Kentucky		
Availability of Public Access Facilities	Pct. Establishments	# Establishments
Weekdays	98%	241
Evenings	47%	115
Weekends	38%	95

Appendix VII: Glossary

***Broadband KY* e-Strategy Report:** This report examines how organizations and households in Kentucky differ in their utilization of broadband and where they can look to make improvements. The report shows in detail how different industry sectors and household types compare to each other, especially between and within regions. The report provides insights and hard evidence that allows regions, businesses, and households to assess where they stand. The report provides recommendations on strategies for improving their Internet performance and benefits.

***Broadband KY* e-Solutions Benchmarking Technical Report:** This report presents the results of survey-based research carried out for the Commonwealth of Kentucky. The surveys collected information from businesses, organizations and households on the availability of broadband (high speed Internet access) and its uses, benefits, drivers and barriers. This largely descriptive report results provide insight into gaps and opportunities for increasing broadband utilization by organizations and households. The policy, planning and program implications for Kentucky and its regions are dealt with in a separate report: the *Broadband KY* e-Strategy Report.

Digital Economy Analysis Platform (KY- DEAP): The DEAP has been developed as an online resource that provides clients with access to the data collection results and the ability to customize their analysis across a range of variables, including industry sector or geographic region. The DEAP is accessed online by authorized users. Users are presented with **dashboards** for businesses and for households. Each dashboard is organized around a series of **pages** focused on specific topics, e.g. Connectivity, Utilization, DEi, Impacts, etc. Within each page is a set of predefined **reports** that present a chart and/or table of processed results from the datasets.

e-Strategies: e-Strategies are high level plans for achieving one or more goals related to improved access to and utilization of broadband Internet. e-Strategies define a course of action that is most likely to successful address opportunities, challenges or barriers related. Strategies are usually seen as distinct from detailed action plans which deal with specific issues of "who, what, when and how".

e-Solutions: refers to the integration of Internet technologies with the internal computer-based systems and applications within or among organizations for a variety of operational processes. e-Solutions encompass not only product delivery and payment transactions (e-commerce) but also all processes that may be facilitated by computer-mediated communications over the Internet.

e-Process: uses of the Internet which include internal operational uses, such as supplier coordination, training and teleworking.

e-Commerce: uses of the Internet which include activities related to the sales, marketing and delivery of products and services; and,

Kentucky Digital Economy Index (KY-DEi): The Digital Economy index (DEi) is part of the benchmarking process and provides reference points against which the performance of any individual or group can be compared. The DEi summarizes an organization's or household's utilization of a range of Internet applications and process – 17 for organizations and 30 for households. Based on the number of applications currently being used by an organization or household, a composite score is calculated that

summarizes how comprehensively each organization or household uses Internet-enabled e-solutions. The DEi can be used to compare organizations, regions, or industry sectors.

Utilization refers to the third stage in the broadband development process. The first stage is providing a community, household or organization with access (availability) to the Internet. The second stage is adoption or the process whereby a person or organization starts to actually use the Internet. The third stage is utilization whereby a person or organization uses their Internet connection to create value. Many people and organizations have access and have adopted the Internet, but are relatively ineffective in how they use and derive benefits from the Internet. The field of analysis labeled "utilization" explores patterns of Internet use and how these patterns can be enhanced.

Commonwealth of Kentucky Office of Broadband Outreach and Development